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ILLINOIS NATURAL HISTORY SURVEY

CENTER FOR AQUATIC ECOLOGY

Final Report

2 February 1998 - 15 March 2001

Creel Survey on Newton Lake

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Submitted to:
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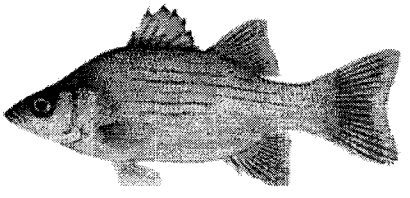
May 2001

Aquatic Ecology Technical Report 01/03



Creel Survey on Newton Lake

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Project Description

An angler creel survey was conducted at Newton Lake from 02/01/98-12/31/98, 01/01/99-02/06/00, and 04/09/00-03/15/01, to estimate angler effort, number, and weight of fish caught and harvested. Because access to Newton Lake is limited, a point-access creel survey was conducted from the public boat ramp. Data was entered and analyzed using the Fisheries Analysis System (FAS) creel database and software. Results from creel survey data collected were to be reported by May 31, 2001. These findings were also added to the Statewide FAS creel database, which is shared by the Illinois Natural History Survey and the Division of Fisheries (both entities within the Illinois Department of Natural Resources).

Introduction

Creel survey data provides a important tool for improving fisheries management decisions. Standardized creel surveys have been conducted in Illinois since 1987. Estimates based on creel survey data include fishing effort, catch rates, and catch, among others. Typically these estimates are used by fishery managers in Illinois to evaluate the effectiveness of harvest regulations, to evaluate the success of a stocking program, and to identify potential areas of concern such as growth overfishing.

Several fisheries in Illinois occur on reservoirs functioning as cooling lakes for nearby power plants. The warm water effluents from these power plants into the lakes can provide open water habitats year-round, benefitting both waterfowl and anglers alike. However, lake water temperatures can become excessively high in the summer, as warm air temperatures limit the cooling potential of the water, and as power plants generate electricity to meet the demands of air conditioners. Extreme thermal effects on fish are well-documented.

Newton Lake, located in Jasper County, Illinois, is a 1,650 acre lake with a mean depth of 6 meters and a maximum depth of 15.5 meters. Constructed in 1976 by creating a dam at the junction of Sandy Creek and Laws Creek, Newton Lake is V-shaped,

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Newton Lake, located in Jasper County, Illinois, is a 1,650 acre lake with a mean depth of 6 meters and a maximum depth of 15.5 meters. Constructed in 1976 by creating a dam at the junction of Sandy Creek and Laws Creek, Newton Lake is V-shaped,

allowing for warm water effluent to be discharged in the west arm and cool water intake in the east arm.

Methods

The Illinois Natural History Survey (INHS) conducted annual creel surveys in Newton Lake for the Ameren Corporation during 02/01/98-12/31/98, 01/01/99-02/06/00, and 04/09/00-03/15/01. The creel surveys on Newton Lake followed a standardized, stratified random design developed by Bayley et al. (1991) for use on Illinois reservoirs. Newton Lake has a single access site for both boat and shore anglers; therefore, a modified roving-access creel survey design was used (Pollock et al. 1994).

Work shifts were randomly assigned to morning or afternoon shifts on a given sample day. Twice during each shift, the creel clerk counted the number of vehicles in the parking lot with trailers and without trailers. Counts of shore anglers and boat anglers were estimated from vehicle counts and verified with on-water angler counts (Perea et al. 19??). Estimated angler counts were used to estimate fishing effort.

Concurrent with each vehicle count, the creel clerk would also collect data on air temperature, surface water temperature (taken off the dock at the boat ramp), secchi disc, wind speed, cloud cover, precipitation, and relative water level.

In addition to vehicle counts, the creel clerk conducted interviews of both boat and shore anglers after they had completed their fishing trips. The clerk collected data on party size, fish sought, trip length, quantity harvested and released by species, and individual fish lengths. Data on party size, trip length, and quantity harvested and released were used to estimate a single population catch rate over all interviews collected during a shift. Total catch was then estimated as the product of fishing effort and catch rate (Bayley et al. 1991).

Results

An interpretive guide to understanding creel survey results is included in Appendix A. To help you interpret the Creel Reports, we've included this guide to explain the contents of creel analysis. Results of the creel surveys are presented in Appendix B.

APPENDIX A. INTERPRETIVE GUIDE TO UNDERSTANDING CREEL SURVEY RESULTS

The following guide is intended to be included with every distribution of the creel survey results. It has been updated from an earlier guide published by Steve Sobaski (IDNR - Watershed Management Section, personal communication).

What's Included in the INHS Interim and Final Creel Reports

To help you interpret the Interim and Final Creel Reports from the Illinois Natural History Survey, we've included this guide to explain the contents of various pages. You will also find a copy of the *Statistical Design and Calculation of Each Creel*, Appendix A. of the 1990 Illinois Natural History Survey report 90/10: Creel Survey Manual for the District Fisheries Analysis System (FAS): A Package for Fisheries Management and Research. This appendix describes how the creel data are collected, their subdivision for analysis by five different categories: specifically the Year Period, Lake Section, Day Period (Morning, Midday, Afternoon), Day Type (Weekday vs. Weekend/Holidays), and Fishing Mode (Boat vs. Shore) that the data were collected from (in other words, the stratification scheme applied to the creel

data), and the statistical methodology used to calculate the estimated total hours of fishing, harvest, and catch.

Each creel report is composed of the following information (in this chronological order):

STRATIFICATION SUMMARY

Information presented here is intended to provide some background as to the pre- and post-stratification methods used in analysis. Creel surveys will be either day or night surveys, and this will be indicated first. Reported next will be the range of sampling dates for which estimates are made. No attempt is made to extrapolate estimates out to months in which no data are collected, unless otherwise noted.

SAMPLING RATIO

The SAMPLING RATIO value, listed directly below STRATIFICATION SUMMARY, is the ratio of the number of Day Periods sampled divided by the total number of day periods included in the estimates. In short, the SAMPLING RATIO gives an index of the intensity of the sampling schedule. For example, suppose 128 Day Periods were sampled between 3/15 and 6/15. To calculate the SAMPLING RATIO, the total

number of Day Periods sampled is divided by the total number of possible Day Periods occurring during that span of dates. In this example, there are 93 days within the span of 3/15 to 6/15, thus 3 x 93 or 279 day periods. The Sampling Ratio = (128/279) x 100%, or 45.8%.

NUMBER OF INTERVIEWS

This is the total number of all angler interviews conducted during the season.

PART ONE: EFFORT, HARVEST, AND CATCH ESTIMATES

TABLE 1. TOTAL FISHING EFFORT

This table reports the estimated total angler-hours of fishing by all anglers. Unless otherwise noted, reports will always apply to all pole and line fishing activity on the entire lake.

As described in *The Statistical Design and Calculation of Each Creel*, the effort estimate, i.e. the estimated total angler-hours of fishing, is calculated separately for boat and shore anglers as well as for all anglers for each Day Period sampled. These estimates are based on the

instantaneous counts of anglers and are scaled up by the effective hours available for fishing for that time of day and year, rather than on the hours of fishing reported in angler interviews. An estimated average effort is then calculated for each combination (i.e. stratum) of Year Period, Lake Section, Day Period, Day Type, and Fishing Mode by averaging the total hours of fishing from all days sampled within the stratum. Stratum averages are scaled up over all possible days in the stratum to provide an estimated stratum total effort. Finally, each stratum total effort is added together to give the separate estimates of total hours of fishing for boat and shore anglers for the lake and time period of interest.

A weighted estimate of the total hours of fishing for anglers is calculated using a stratified approach. Rather than combining the boat and shore instantaneous counts for each sample and ignoring any potential difference in the day-to-day variability of boat versus shore fishing, the stratified approach first calculates separate estimates of total effort for boat and for shore anglers for the entire period being reported. These totals and their variances are then combined to give the overall total estimated hours of fishing.

The **FISHING MODE** column will usually include BOAT, SHORE, and BOAT & SHORE. Estimates are made separately for boat and for shore fishing, and these estimates are later combined into an overall total estimate of both boat and shore.

The **DAY TYPE** column shows estimates for WEEKDAY and HOLIDAY. The WEEKDAY estimates only include Monday through Friday fishing, excluding holidays that fall on weekdays. The HOLIDAY estimates include all holidays and all weekend days (Saturdays and Sundays). Days that are considered holidays for the purposes of this creel only include: New Year's Day, Martin Luther King Jr.'s Birthday Observed, Presidents' Day, Memorial Day Observed, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day.

Estimates of the total hours of fishing (the **ANGLER-HOURS** column) by BOAT anglers, SHORE anglers, and BOAT & SHORE anglers are reported in separate blocks in the table. The strata total estimates for each type of angler are further subdivided by Day Type (WEEKDAY versus HOLIDAY).

The **95% CI** columns follow estimated totals, such as ANGLER HOURS in TABLE 1, and in TABLES 3-8. These report the 95% confidence interval for the estimated totals. In other words, 95% of the time we'd expect the true total to fall within that given range. In cases where the lower limit of the confidence interval is a negative number, a value of zero is shown in the table. The percentage listed in ( ) after the confidence interval is another indicator of the precision of the estimate. This percentage is calculated as: (Upper value of the 95% CI - Estimated Total) / Estimated Total. The larger this percentage is, the less accurate the estimate. For example, if the Total Angler Hours Estimate is 30,293, with an upper 95% confidence interval of 34,952, the precision percentage is calculated as (34,952 - 30,293) / 30,293 or 15.38%. The percentage is rounded to the nearest integer for the tabular output.

The **HOURS/ACRE** column gives the Hours of Fishing per acre of lake surface area. This is calculated by dividing the ANGLER HOURS value in each row by the acreage value shown at the top of the page.

The **% EFF INTVD** column, located on the right margin of the effort table, is the percentage of the estimated total

effort actually accounted for by angler interviews. This number is calculated by summing the total hours of fishing reported by anglers from each stratum (i.e. Day Period, Year Period, Day Type, and Fishing Mode combination) and dividing it by the estimated total fishing effort (calculated from the instantaneous counts) for that period. For instance, a total of 120 hours of weekday fishing might be reported by BOAT anglers for Day Period 1 (Sunrise to 10:00 A.M.) between 6/01/94 and 6/15/94. The estimated total BOAT effort, however, based on the average BOAT angler instantaneous counts of Day Period 1 extrapolated by the 11 weekdays within 6/01/94 and 6/15/94, turns out to be 360 hours. The % EFF INTVD value for this stratum would be: (120 angler-hours from interviews) / (360 angler-hours from instantaneous counts) x 100 = 33.33%. Like SAMPLING RATIO, this number gives an indication of the effectiveness of the sampling intensity. A higher % EFF INTVD value indicates a more complete job of obtaining information on all of the angling activity for that type of angler. If you sampled every day within a stratum and interviewed every angler (in other words conducted a census rather than a survey), this percentage would approach or possibly exceed 100%.

TABLE 2. TOTAL FISHING HARVEST AND HARVEST RATES,IN NUMBERS OF FISH

The **# HARVESTED** column is the estimated total number of fish harvested for the season, by species. The top number in this column will always contain the estimated total number of all fish harvested for the season, as indicated by "All species" under the SPECIES column header. For any given species, a "**** NOT RECORDED ****" entry indicates that no harvested fish were recorded from the angler interviews, and therefore no estimate of the total harvest could be made.

The **95% CI** column next to the # HARVESTED column contains the 95% confidence interval estimate of the # HARVESTED value. The lower confidence limit is shown on the left and is separated by a dash from the upper confidence limit shown on the right. In cases where the lower limit of the confidence interval is a negative number, a value of zero is shown in the table. A negative or zero value for the lower 95% confidence interval is usually the result of very few fish of a particular species being sampled in the angler interviews. Next to the upper confidence limit, in

parentheses, is an additional estimate of the precision of the # HARVESTED estimate, and is calculated as:

((Upper 95% CI - # HARVESTED) / # HARVESTED) x 100%

The **#/HOUR** estimate is the population harvest rate, and is defined as the number of fish harvested per angler-hour of fishing. Note that angler-hours are the same units as are reported in TABLE 1. Also, note that this is not an estimate of the average harvest rate per angler. Rate estimates with a value of .000 have a harvest rate that is less than 0.001 but greater than zero. A *zero* rate is not recorded.

The **95% CI** column next to the #/HOUR column is the 95% Confidence Interval estimate of the #/HOUR estimate, and is calculated similarly to the methods described earlier.

The **#/HA** column is the estimated total number of fish harvested per hectare of lake surface area. One hectare is equivalent to 2.4711 acres.

The **#/ACRE** column is the estimated total number of fish harvested per acre of lake surface area. Lake surface area is reported at the top of Page 1.

The **SPECIES** column lists all species recorded in angler interviews. Note that this is different from the original Apple II/e creel analysis reports. These original reports were memory-limited to only 9 species per table. Additional species were either included in an additional table or were listed under "MSC" (Miscellaneous species) in the harvest table. Beginning with the 1999 creel analysis reports, all species recorded in angler interviews will be listed in Table 2 through Table 7. Any species that does not appear in these tables was not recorded in angler interviews, and therefore no estimate could be made of the harvest or catch for that species.

TABLE 3. TOTAL FISHING HARVEST AND HARVEST RATES, IN KILOGRAMS.

Table 3 contains the estimated total fishing harvest and harvest rates in kilograms, and is structurally similar to TABLE 2. See TABLE 2 for a further discussion of the estimates under the 95% CI and SPECIES headers. Unique features of TABLE 3 are discussed below.

The **KG HARVESTED** column contains the estimated total harvest biomass, in kilograms.

The **KG/HOUR** column is the estimated total harvest biomass per angler-hour of fishing effort.

The **KG/HA** column is the estimated total harvest biomass per hectare of lake surface area.

The **AVE KG** column is the estimated average weight per harvested fish, in kilograms. Note that TABLES 3,4,6,and 7 do not contain a per acre estimate of harvest or catch.

TABLE 4. TOTAL FISHING HARVEST AND HARVEST RATES, IN POUNDS.

TABLE 4 is structurally similar to TABLE 3, except that all biomass estimates are reported in pounds rather than in kilograms. For a discussion of the organization of TABLE 4, see the discussion for TABLE 2 and TABLE 3.

TABLES 5-7. TOTAL FISHING CATCH AND CATCH RATES

TABLES 5-7 are structurally similar to TABLES 2-4, respectively, except that all harvest estimates are replaced with catch estimates. Catch estimates contain estimates of both harvested fish and released fish. For a discussion of the organization of TABLES 5-7, see the discussions for TABLES 2-4, respectively.

A NOTE ON BIOMASS ESTIMATES

Rather than measuring fish weights directly during interviews, weights are estimated based on the standard length to weight relationship:

$$Weight = a * TotalLength^{b}$$

These length-weight relationships were developed for each species from IDNR population survey data stored in the Illinois STATE FAS database, or from fisheries literature. Average fish weights reported in the AVG KG and AVG LB are calculated by dividing the estimated total biomass caught (e.g. KG CAUGHT) by the estimated total number caught (e.g. # CAUGHT) for each species.

PART TWO: SUPPLEMETAL INTERVIEW INFORMATION

The pages following the effort, harvest, and catch tables summarize various data collected during angler interviews. Numbers reported here differ from those of the previous tables since these numbers are unweighted averages based solely on interview data rather than estimated totals for an entire year. Rather than stratifying these data as is done for the effort, harvest, and catch estimates, these tables take all interview data, combine it regardless of when it was collected during the survey and report simple averages.

TABLE 8. TRIP LENGTH, DISTANCE TRAVELED, AND SUCCESS RATING

TABLE 8 contains summary statistics for fishing trip length, distance traveled from home to the fishing site, and fishing success rating. Fishing trip length is identified by the header HOURS PER COMPLETED TRIP, and is defined as the number of decimal hours between the start and end of an angler's fishing trip on a given day. MILES TRAVELED is defined as the number of miles that an angler

traveled from home to arrive at the fishing site. SUCCESS RATING is an angler's interpretation of his or her fishing success during the trip for which he or she was interviewed. The angler can provide an answer on a scale from 1 to 10, with 10 being the most successful. While this rating is subjected to each individual angler's interpretation, anglers are asked not to consider social or other factors influencing their fishing experience, and to focus only on their catch.

The **MEAN** is calculated as a simple, unweighted, and unstratified average.

The **95% CI** column is the 95% confidence interval of the MEAN. (For a discussion of the 95% CI, see the discussion of TABLE 1.)

The **MIN** and **MAX** columns represent the range of values reported in the interviews, or the minimum value and maximum value, respectively.

The **#SAMPLES** column contains the sample size, or number of interviews, used in the calculations.

Two footnotes appear at the bottom of TABLE 8. The first footnote indicates the number of split interviews used in the calculation of HOURS PER COMPLETED TRIP. A split interview is defined as an interview that falls over two or three Day Periods (Morning, Midday, and Afternoon). For example, a fishing trip that began at 7:00am and ended at 12:00pm falls over both the Morning Day Period and the Midday Day Period. The second footnote indicates the percentage of all interviews that were completed trip interviews. All other interviews are considered incomplete, and are defined as interviews of anglers that are still actively fishing at the time of the interview.

ILLEGAL HARVEST

Illegally harvested fish are defined as fish that are in the possession of the angler at the time of the interview that have been harvested in violation of (1) the Illinois Fishing Information regulation booklet, published by the Illinois Department of Natural Resources, or (2) any additional site-specific regulations not outlined in the regulation booklet. Creel clerks witnessing harvest violations do not notify the angler, nor do they notify the

authorities. The ILLEGAL HARVEST information reported here is simply a tally of the number of interviews that had illegally harvested fish at the time of the interview.

TABLE 9. FREQUENCY DISTRIBUTION OF ANGLER PARTY SIZE

An angler party is defined as a group of anglers fishing together and combined into a single angler interview. For example, two anglers fishing in the same boat are often interviewed together as an angler party size of 2. TABLE 9 shows the frequency distribution of angler party sizes for boat and shore interviews.

TABLE 10. TARGETED SPECIES

TABLE 10 is a tally of all species that anglers are targeting, along with a percentage of the total in parentheses. During an interview, anglers are asked what species they are trying to catch, or are *targeting*. Anglers can respond by saying they are targeting a specific species (i.e. bluegill), a family of species (i.e. sunfish), or any fish at all.

TABLE 11. CATCH FREQUENCY DISTRIBUTION

TABLE 11 is a frequency distribution of anglers reporting a given number of harvested and released fish, by species, for completed trip interviews only. It examines each interview for the number of fish of a single species or species group reported as harvested and released. It then calculates the average harvest and catch per angler by dividing the total number harvested and the total released for that species by the number of anglers in the party. The table reports the number of anglers, broken down by their catch rate. An example of this table, for walleye reported as harvested in 500 completed trip

interviews might be:

# OF FISH:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Walleye																
HARVEST	651	50	7	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	578	101	26	3	-	-	-	-	-	-	-	-	-	-	-	-

The 500 completed trip interviews actually cover the catch of 708 anglers in this case, since a number of angler

parties had more than one angler. Of these 708 anglers, 651 anglers reported no walleye harvested on their trip (or averaged less than 1 walleye per angler per angler party), 50 anglers were in parties that harvested an average of 1 walleye/angler, and 7 anglers were in parties that harvested an average of 2 walleye/angler. No anglers were in parties that harvested more than 2 walleye/angler. Each zero value is represented by a dash.

PART THREE: LENGTH-FREQUENCY HISTOGRAMS

The final pages of the creel report show length-frequency histograms for harvested and released fish, for the major game species only. Fish reported in each chart include all interviews, not just completed trip interviews. The frequency of fish reported for each centimeter total length group are the actual totals of fish reported in interviews rather than estimated totals as are reported in TABLES 2-7. Two charts are reported per species; the first chart displays harvested fish, while the second chart displays released fish.

ILLINOIS NATURAL HISTORY SURVEY
CENTER FOR AQUATIC ECOLOGY
1998 CREEL SURVEY RESULTS

1998 NEWTON LAKE
1750 ACRES
REGION 5, DISTRICT 19

STRATIFICATION SUMMARY:

Day creel only.
Results cover **02/16/1998 through 12/31/1998**
Year periods stratified.
Fishing modes (boat vs. shore) stratified.
Day types (weekday vs. weekend/holiday) stratified.
Day periods (morning, midday, and afternoon) stratified.

SAMPLING RATIO: 376/957 = 39.3%

NUMBER OF INTERVIEWS: 5142

Table 1. Total fishing effort, by fishing mode and day type.

FISHING MODE	DAYTYPE	ANGLER-HOURS	95% CI		HOURS/ACRE	95% CI		% EFF
BOAT	WEEKDAY	41179	37435-44923	(9%)	24	21-26	(9%)	14%
	HOLIDAY	48155	44794-51515	(7%)	28	26-29	(7%)	37%
	TOTAL	89334	84303-94365	(6%)	51	48-54	(6%)	26%
SHORE	WEEKDAY	5723	4853-6593	(15%)	3	3-4	(15%)	0%
	HOLIDAY	7122	5892-8352	(17%)	4	3-5	(17%)	1%
	TOTAL	12845	11424-14266	(11%)	7	7-8	(11%)	1%
BOAT & SHORE	WEEKDAY	46902	43059-50746	(8%)	27	25-29	(8%)	12%
	HOLIDAY	55277	51734-58820	(6%)	32	30-34	(6%)	32%
	TOTAL	102179	96952-107407	(5%)	58	55-61	(5%)	23%

Table 2. Total fishing harvest and harvest rates, in numbers of fish.

# HARVESTED	95% CI		#/HOUR	95% CI		#/HA	#/ACRE	SPECIES
12604	10225-14983	(19%)	.108	.074-.141	(31%)	17.80	7.20	All species
5	0-17	(218%)	.000	.000-.000	(218%)	0.01	0.00	Black bullhead
953	0-1923	(102%)	.014	.000-.034	(140%)	1.35	0.54	Bluegill
11	0-29	(161%)	.000	.000-.000	(157%)	0.02	0.01	Carp
9389	7438-11340	(21%)	.078	.053-.104	(33%)	13.26	5.37	Channel catfish
422	17-827	(96%)	.003	.000-.007	(95%)	0.60	0.24	Green sunfish
			**** NOT RECORDED ****					Gizzard shad
1503	1024-1983	(32%)	.010	.004-.016	(61%)	2.12	0.86	Largemouth bass
18	0-48	(164%)	.000	.000-.001	(204%)	0.03	0.01	Longear sunfish
			**** NOT RECORDED ****					Orangespotted sunfish
			**** NOT RECORDED ****					Pumpkinseed
26	0-89	(245%)	.000	.000-.001	(245%)	0.04	0.01	Warmouth
275	0-953	(246%)	.001	.000-.005	(252%)	0.39	0.16	White bass
			**** NOT RECORDED ****					White crappie
1	0-4	(318%)	.000	.000-.000	(430%)	0.00	0.00	Yellow bullhead

Table 3. Total fishing harvest and harvest rates, in kilograms.

KG HARVESTED	95% CI		KG/HOUR	95% CI		KG/HA	AVE KG	SPECIES
5439	4528-6350	(17%)	.037	.026-.047	(28%)	7.68	0.432	All species
6	0-20	(220%)	.000	.000-.000	(218%)	0.01	1.262	Black bullhead
40	8-72	(81%)	.000	.000-.001	(122%)	0.06	0.042	Bluegill
6	0-15	(157%)	.000	.000-.000	(167%)	0.01	0.584	Carp
2914	2308-3519	(21%)	.021	.015-.027	(30%)	4.11	0.310	Channel catfish
35	0-81	(128%)	.000	.000-.000	(92%)	0.05	0.084	Green sunfish
			**** NOT RECORDED ****					Gizzard shad
2300	1712-2888	(26%)	.014	.005-.024	(65%)	3.25	1.530	Largemouth bass
1	0-3	(154%)	.000	.000-.000	(181%)	0.00	0.066	Longear sunfish
			**** NOT RECORDED ****					Orangespotted sunfish
			**** NOT RECORDED ****					Pumpkinseed
3	0-10	(257%)	.000	.000-.000	(245%)	0.00	0.110	Warmouth
133	0-470	(253%)	.001	.000-.002	(255%)	0.19	0.484	White bass
			**** NOT RECORDED ****					White crappie
0	0-2	(430%)	.000	.000-.000	(318%)	0.00	0.342	Yellow bullhead

Table 4. Total fishing harvest and harvest rates, in pounds.

LB HARVESTED	95% CI		LB/HOUR	95% CI		LB/ACRE	AVE LB	SPECIES
11991	9982-14000	(17%)	.081	.058-.104	(28%)	6.85	0.951	All species
14	0-44	(218%)	.000	.000-.000	(220%)	0.01	2.783	Black bullhead
88	17-160	(81%)	.001	.000-.002	(122%)	0.05	0.093	Bluegill
13	0-34	(162%)	.000	.000-.000	(167%)	0.01	1.287	Carp
6424	5089-7759	(21%)	.046	.032-.060	(30%)	3.67	0.684	Channel catfish
78	0-178	(128%)	.000	.000-.001	(92%)	0.04	0.185	Green sunfish
			**** NOT RECORDED ****					Gizzard shad
5071	3774-6367	(26%)	.032	.011-.052	(65%)	2.90	3.374	Largemouth bass
3	0-7	(154%)	.000	.000-.000	(181%)	0.00	0.146	Longear sunfish
			**** NOT RECORDED ****					Orangespotted sunfish
			**** NOT RECORDED ****					Pumpkinseed
6	0-21	(245%)	.000	.000-.000	(245%)	0.00	0.242	Warmouth
294	0-1036	(253%)	.001	.000-.005	(255%)	0.17	1.068	White bass
			**** NOT RECORDED ****					White crappie
1	0-4	(430%)	.000	.000-.000	(318%)	0.00	0.754	Yellow bullhead

Table 5. Total fishing catch and catch rates, in numbers of fish.
Catch includes both harvested and released fish.

# CAUGHT	95% CI		#/HOUR	95% CI		#/HA	#/ACRE	SPECIES
91711	82543-100879	(10%)	.618	.545-.691	(12%)	129.50	52.41	All species
5	0-17	(218%)	.000	.000-.000	(218%)	0.01	0.00	Black bullhead
4556	2546-6566	(44%)	.045	.018-.072	(60%)	6.43	2.60	Bluegill
28	0-56	(99%)	.000	.000-.000	(120%)	0.04	0.02	Carp
24832	19413-30252	(22%)	.183	.139-.227	(24%)	35.06	14.19	Channel catfish
744	0-1534	(106%)	.006	.002-.010	(73%)	1.05	0.43	Green sunfish
236	0-660	(180%)	.002	.000-.005	(153%)	0.33	0.13	Gizzard shad
60187	54743-65632	(9%)	.374	.330-.419	(12%)	84.98	34.39	Largemouth bass
20	0-50	(147%)	.000	.000-.001	(198%)	0.03	0.01	Longear sunfish
98	0-221	(125%)	.001	.000-.001	(109%)	0.14	0.06	Orangespotted sunfish
20	0-67	(243%)	.000	.000-.001	(296%)	0.03	0.01	Pumpkinseed
132	0-278	(110%)	.000	.000-.001	(106%)	0.19	0.08	Warmouth
840	0-2019	(140%)	.006	.000-.013	(115%)	1.19	0.48	White bass
11	0-38	(257%)	.000	.000-.000	(257%)	0.02	0.01	White crappie
1	0-4	(318%)	.000	.000-.000	(430%)	0.00	0.00	Yellow bullhead

Table 6. Total fishing catch and catch rates, in kilograms.

KG CAUGHT	95% CI		KG/HOUR	95% CI		KG/HA	AVE KG	SPECIES
55088	49622-60554	(10%)	.331	.290-.372	(12%)	77.78	0.601	All species
6	0-20	(220%)	.000	.000-.000	(218%)	0.01	1.262	Black bullhead
158	62-254	(61%)	.001	.001-.002	(56%)	0.22	0.035	Bluegill
12	1-22	(87%)	.000	.000-.000	(113%)	0.02	0.416	Carp
4500	3608-5392	(20%)	.031	.023-.039	(25%)	6.35	0.181	Channel catfish
47	0-97	(107%)	.000	.000-.001	(96%)	0.07	0.063	Green sunfish
4	0-11	(226%)	.000	.000-.000	(200%)	0.00	0.015	Gizzard shad
49999	44920-55078	(10%)	.296	.257-.335	(13%)	70.60	0.831	Largemouth bass
2	0-4	(121%)	.000	.000-.000	(161%)	0.00	0.083	Longear sunfish
5	0-11	(126%)	.000	.000-.000	(104%)	0.01	0.051	Orangespotted sunfish
1	0-2	(173%)	.000	.000-.000	(274%)	0.00	0.032	Pumpkinseed
13	1-25	(91%)	.000	.000-.000	(106%)	0.02	0.099	Warmouth
337	0-858	(155%)	.002	.000-.005	(120%)	0.48	0.401	White bass
6	0-20	(257%)	.000	.000-.000	(278%)	0.01	0.560	White crappie
0	0-2	(430%)	.000	.000-.000	(318%)	0.00	0.342	Yellow bullhead

Table 7. Total fishing catch and catch rates, in pounds.

LB CAUGHT	95% CI		LB/HOUR	95% CI		LB/ACRE	AVE LB	SPECIES
121449	109398-133499	(10%)	.729	.639-.819	(12%)	69.40	1.324	All species
14	0-44	(218%)	.000	.000-.000	(220%)	0.01	2.783	Black bullhead
348	136-559	(61%)	.003	.001-.004	(56%)	0.20	0.076	Bluegill
26	3-48	(87%)	.000	.000-.000	(113%)	0.01	0.918	Carp
9921	7954-11887	(20%)	.068	.051-.085	(25%)	5.67	0.400	Channel catfish
104	0-215	(107%)	.001	.000-.002	(96%)	0.06	0.139	Green sunfish
8	0-25	(226%)	.000	.000-.000	(200%)	0.00	0.033	Gizzard shad
110229	99032-121426	(10%)	.652	.566-.738	(13%)	62.99	1.831	Largemouth bass
4	0-8	(121%)	.000	.000-.000	(161%)	0.00	0.183	Longear sunfish
11	0-25	(126%)	.000	.000-.000	(104%)	0.01	0.113	Orangespotted sunfish
1	0-4	(173%)	.000	.000-.000	(274%)	0.00	0.070	Pumpkinseed
29	2-55	(91%)	.000	.000-.000	(106%)	0.02	0.218	Warmouth
743	0-1891	(155%)	.005	.000-.011	(120%)	0.42	0.884	White bass
12	0-47	(278%)	.000	.000-.000	(257%)	0.01	1.234	White crappie
1	0-4	(430%)	.000	.000-.000	(318%)	0.00	0.754	Yellow bullhead

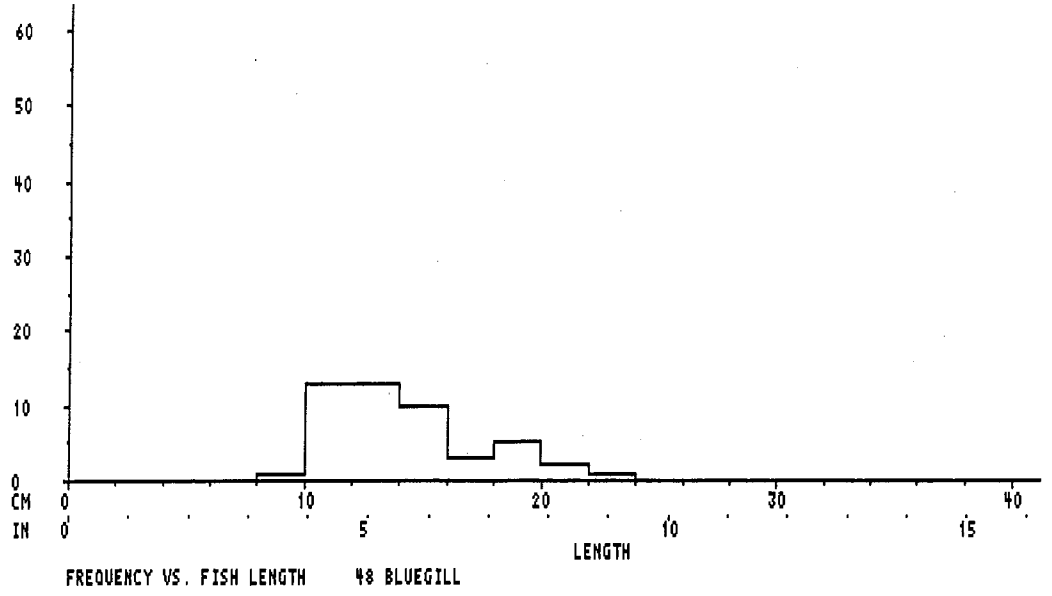

Figure 1. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of bluegill harvested by all anglers.

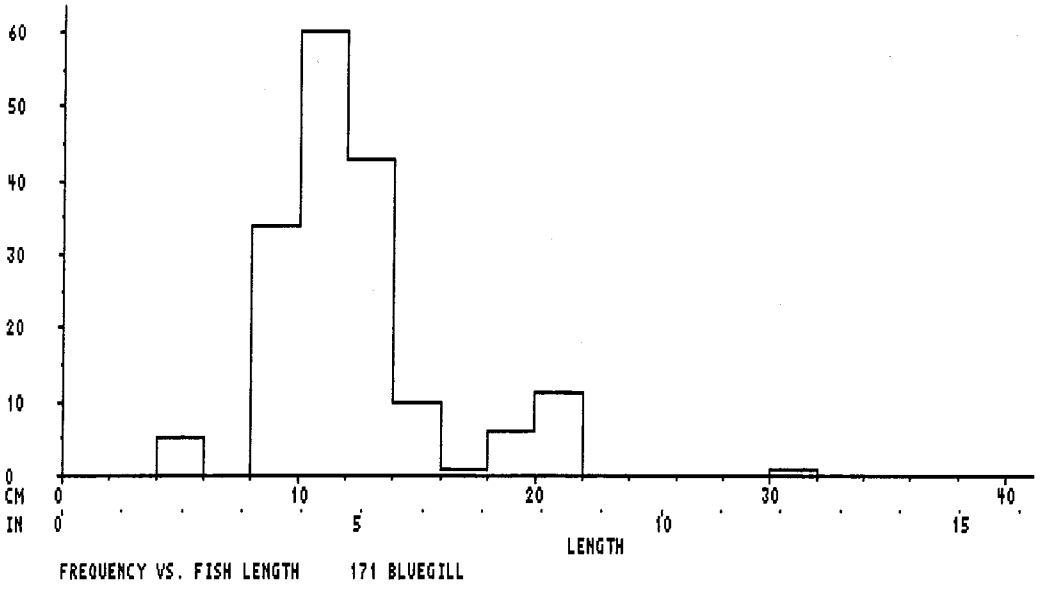

Figure 2. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of bluegill released by all anglers.

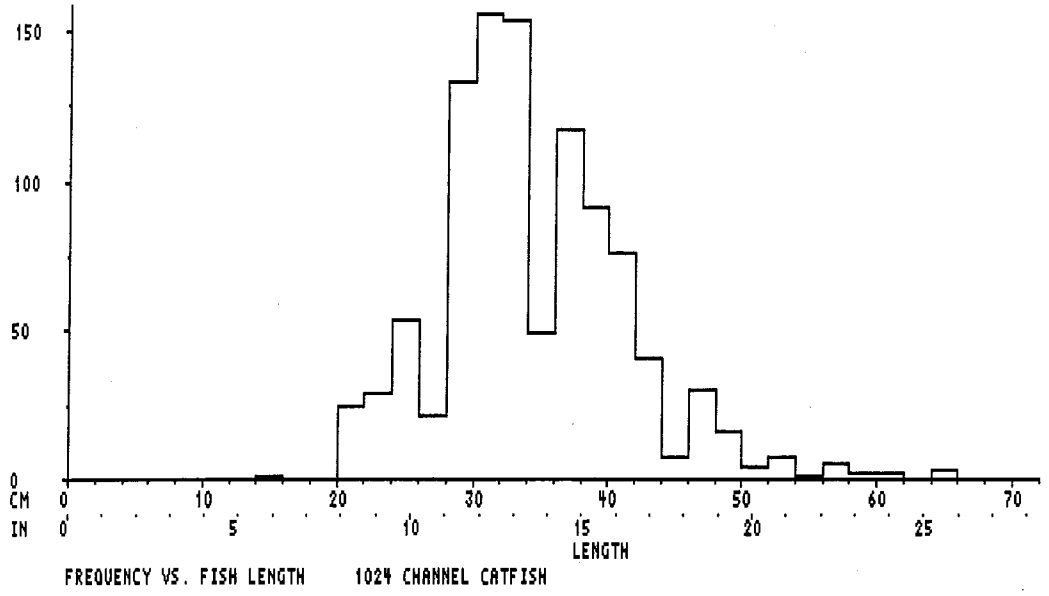

Figure 3. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of channel catfish harvested by all anglers.

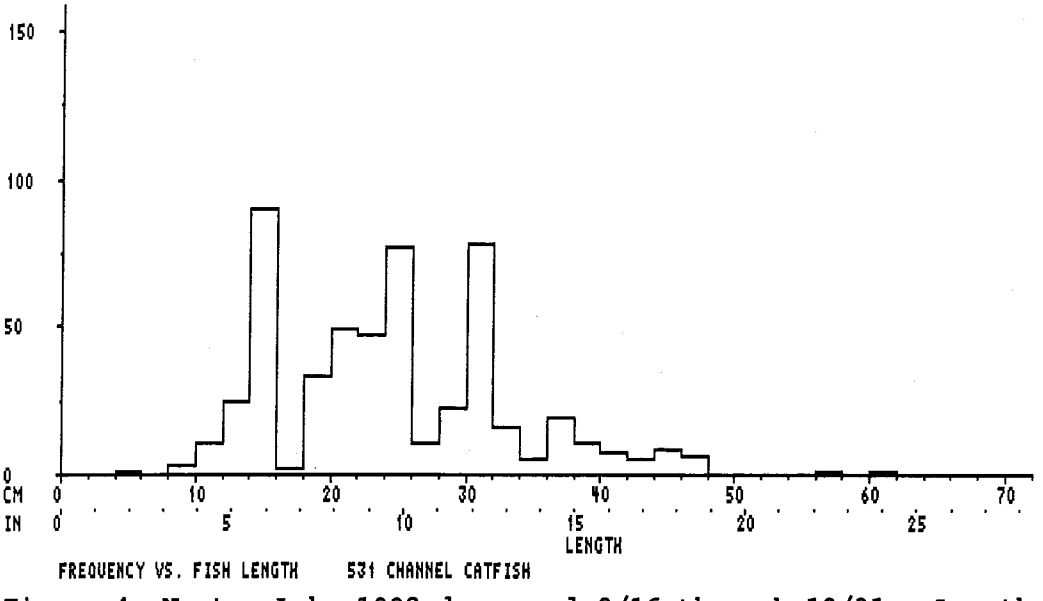

Figure 4. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of channel catfish released by all anglers.

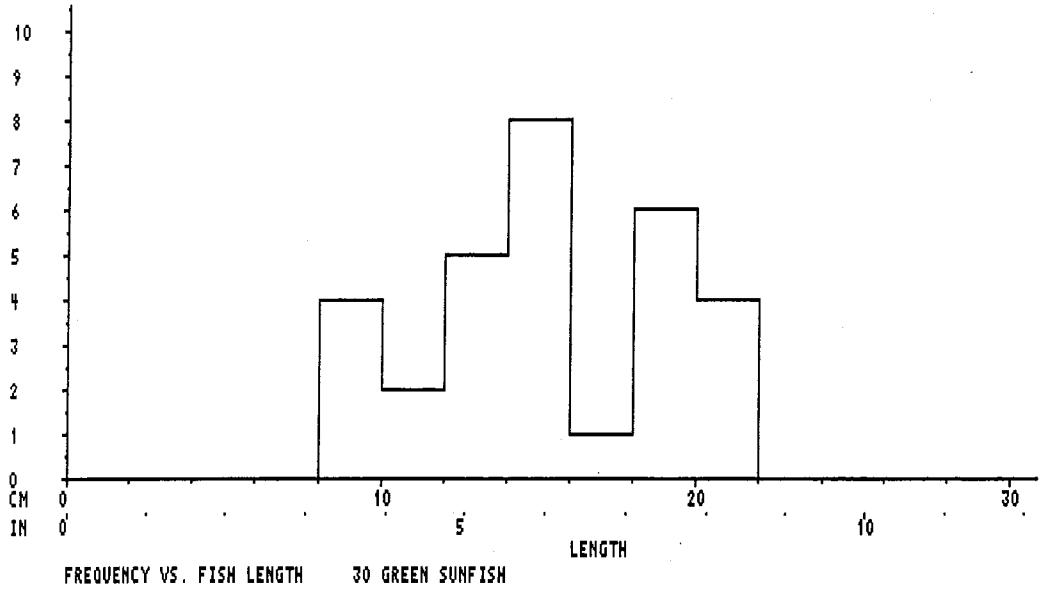

Figure 5. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of green sunfish harvested by all anglers.

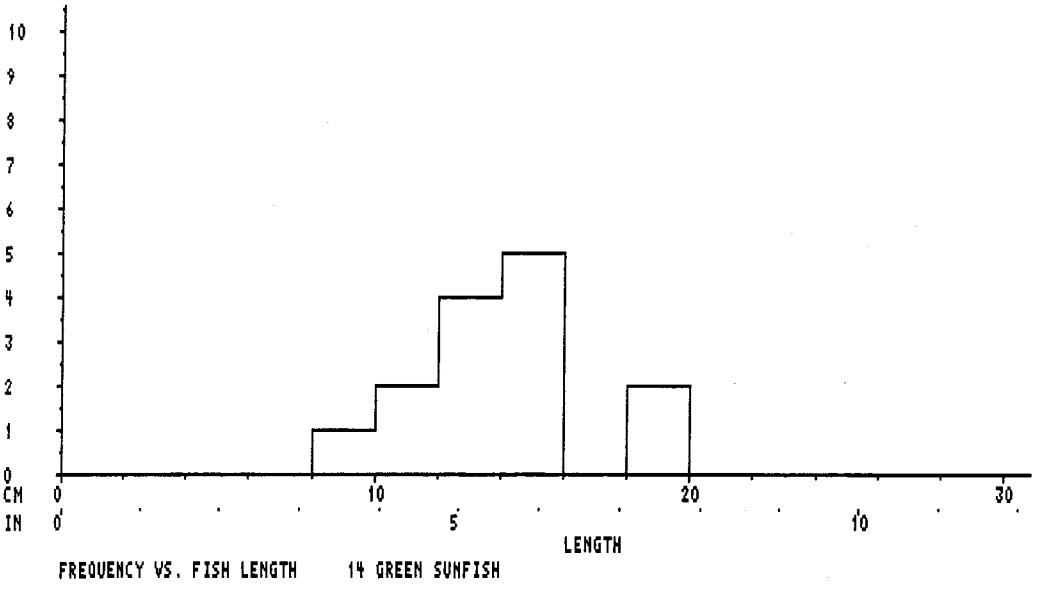

Figure 6. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of green sunfish released by all anglers.

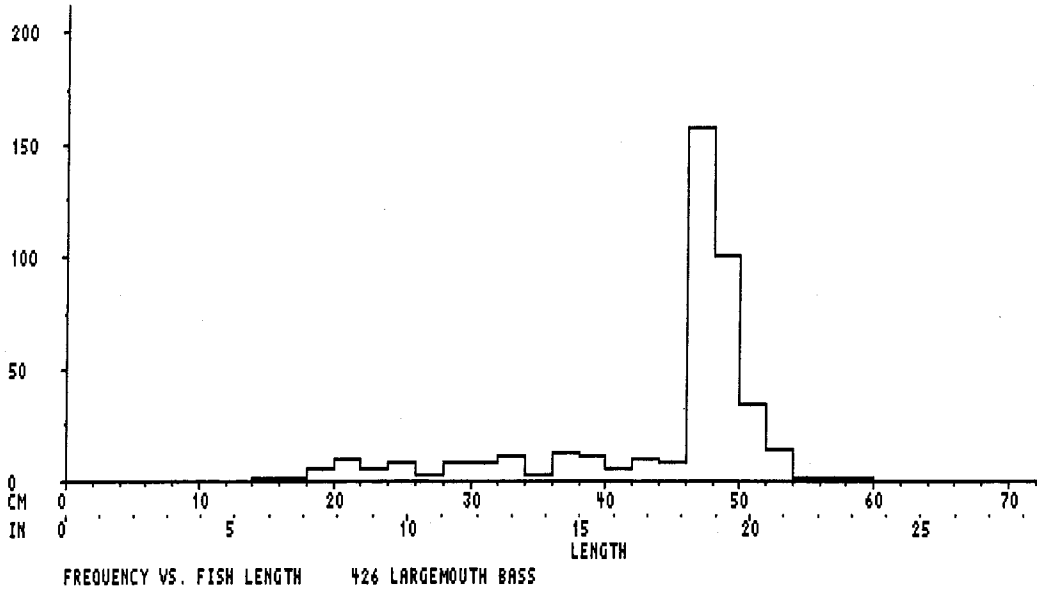

Figure 7. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of largemouth bass harvested by all anglers.

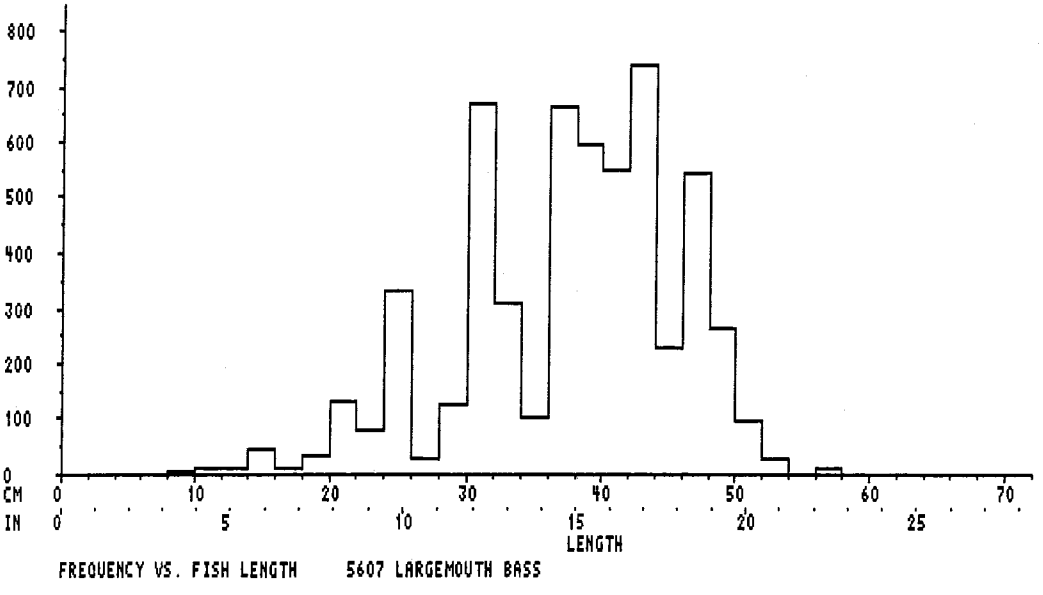

Figure 8. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of largemouth bass released by all anglers.

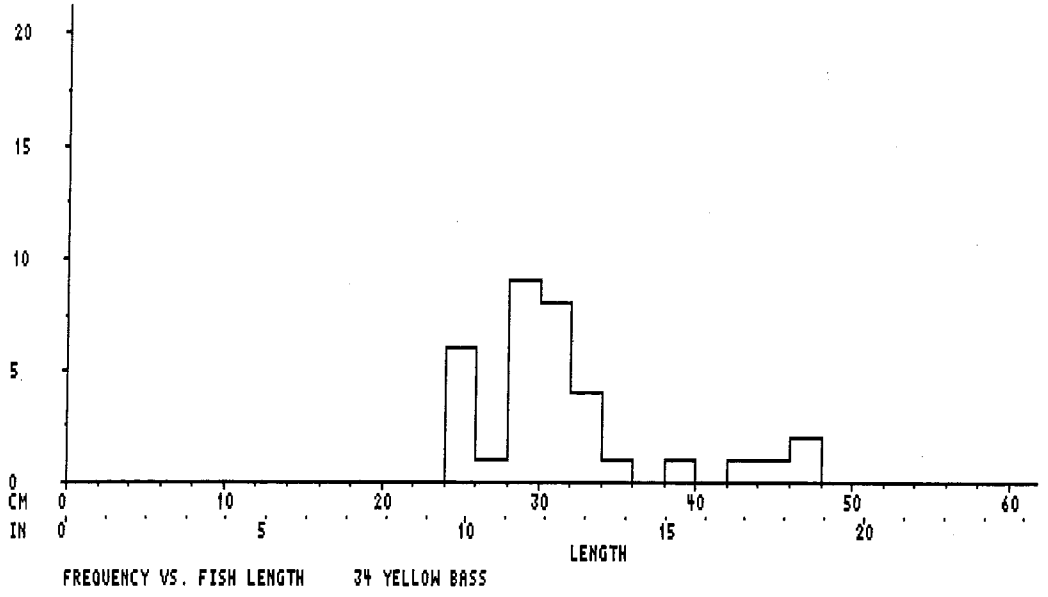

Figure 9. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of yellow bass harvested by all anglers.

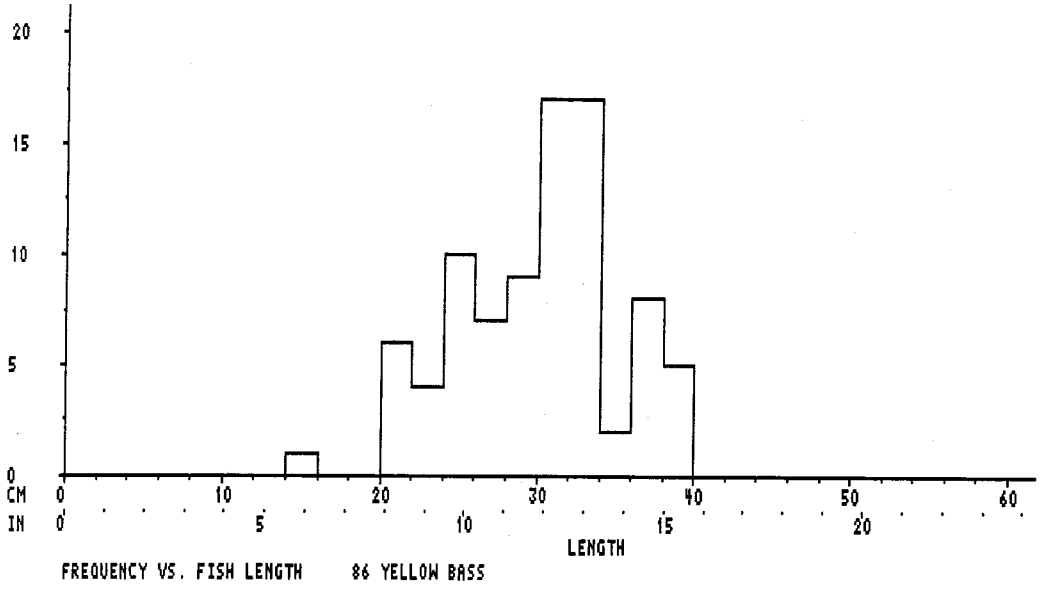

Figure 10. Newton Lake 1998 day creel 2/16 through 12/31. Length-frequency histogram of yellow bass released by all anglers.

ILLINOIS NATURAL HISTORY SURVEY
CENTER FOR AQUATIC ECOLOGY
1999 CREEL SURVEY RESULTS

1999 NEWTON LAKE
1750 ACRES
REGION 5, DISTRICT 19

STRATIFICATION SUMMARY:

Day creel only.
Results cover **01/01/1999 through 12/31/1999**
Year periods stratified.
Fishing modes (boat vs. shore) stratified.
Day types (weekday vs. weekend/holiday) stratified.
Day periods (morning, midday, and afternoon) stratified.

SAMPLING RATIO: 391/1095 = 35.7%

NUMBER OF INTERVIEWS: 5968

Table 1. Total fishing effort, by fishing mode and day type.

FISHING MODE	DAYTYPE	ANGLER-HOURS	95% CI		HOURS/ACRE	95% CI		% EFF
BOAT	WEEKDAY	46257	41644-50870	(10%)	26	24-29	(10%)	15%
	HOLIDAY	48419	44178-52659	(9%)	28	25-30	(9%)	45%
	TOTAL	94675	88409-100942	(7%)	54	51-58	(7%)	30%
SHORE	WEEKDAY	5503	4429-6577	(20%)	3	3-4	(20%)	4%
	HOLIDAY	5849	5173-6525	(12%)	3	3-4	(12%)	5%
	TOTAL	11352	10083-12621	(11%)	6	6-7	(11%)	4%
BOAT & SHORE	WEEKDAY	51760	47023-56496	(9%)	30	27-32	(9%)	14%
	HOLIDAY	54267	49973-58562	(8%)	31	29-33	(8%)	41%
	TOTAL	106027	99634-112420	(6%)	61	57-64	(6%)	27%

Table 2. Total fishing harvest and harvest rates, in numbers of fish.

# HARVESTED	95% CI		#/HOUR	95% CI	#/HA	#/ACRE	SPECIES
18607	13982-23231	(25%)	.160	.111-.210 (31%)	26.27	10.63	All species
			**** NOT RECORDED ****				Bluegill x Green
			**** NOT RECORDED ****				Black bullhead
23	0-82	(257%)	.000	.000-.000 (257%)	0.03	0.01	Black crappie
548	112-985	(80%)	.032	.000-.073 (130%)	0.77	0.31	Bluegill
12	0-27	(132%)	.000	.000-.000 (179%)	0.02	0.01	Carp
12023	9876-14171	(18%)	.101	.072-.130 (29%)	16.98	6.87	Channel catfish
			**** NOT RECORDED ****				Flathead catfish
68	0-145	(114%)	.000	.000-.001 (169%)	0.10	0.04	Green sunfish
3140	0-6866	(119%)	.012	.000-.025 (115%)	4.43	1.79	Gizzard shad
2100	1619-2581	(23%)	.011	.007-.015 (37%)	2.97	1.20	Largemouth bass
2	0-7	(223%)	.000	.000-.000 (223%)	0.00	0.00	Longear sunfish
			**** NOT RECORDED ****				Orangespotted sunfish
			**** NOT RECORDED ****				Pumpkinseed
			**** NOT RECORDED ****				Warmouth
455	0-992	(118%)	.002	.000-.003 (92%)	0.64	0.26	White bass
236	37-435	(84%)	.003	.000-.005 (87%)	0.33	0.13	White crappie

Table 3. Total fishing harvest and harvest rates, in kilograms.

KG HARVESTED	95% CI		KG/HOUR	95% CI	KG/HA	AVE KG	SPECIES
8650	7336-9964	(15%)	.057	.045-.070 (22%)	12.21	0.465	All species
			**** NOT RECORDED ****				Bluegill x Green
			**** NOT RECORDED ****				Black bullhead
7	0-26	(257%)	.000	.000-.000 (278%)	0.01	0.333	Black crappie
29	4-54	(86%)	.001	.000-.003 (148%)	0.04	0.053	Bluegill
10	0-23	(137%)	.000	.000-.000 (177%)	0.01	0.878	Carp
4924	3881-5966	(21%)	.037	.026-.048 (30%)	6.95	0.410	Channel catfish
			**** NOT RECORDED ****				Flathead catfish
8	0-17	(111%)	.000	.000-.000 (153%)	0.01	0.123	Green sunfish
19	0-44	(137%)	.000	.000-.000 (132%)	0.03	0.006	Gizzard shad
3403	2640-4166	(22%)	.018	.011-.025 (40%)	4.80	1.620	Largemouth bass
1	0-2	(226%)	.000	.000-.000 (223%)	0.00	0.252	Longear sunfish
			**** NOT RECORDED ****				Orangespotted sunfish
			**** NOT RECORDED ****				Pumpkinseed
			**** NOT RECORDED ****				Warmouth
187	0-420	(125%)	.001	.000-.001 (92%)	0.26	0.412	White bass
63	11-115	(82%)	.001	.000-.001 (86%)	0.09	0.267	White crappie

Table 4. Total fishing harvest and harvest rates, in pounds.

LB HARVESTED	95% CI		LB/HOUR	95% CI	LB/ACRE	AVE LB	SPECIES
19070	16173-21967	(15%)	.127	.099-.155 (22%)	10.90	1.025	All species
			**** NOT RECORDED ****				Bluegill x Green
			**** NOT RECORDED ****				Black bullhead
16	0-58	(257%)	.000	.000-.000 (257%)	0.01	0.733	Black crappie
64	9-120	(86%)	.003	.000-.006 (148%)	0.04	0.117	Bluegill
21	0-50	(137%)	.000	.000-.000 (177%)	0.01	1.935	Carp
10855	8557-13153	(21%)	.082	.057-.106 (30%)	6.20	0.903	Channel catfish
			**** NOT RECORDED ****				Flathead catfish
18	0-38	(111%)	.000	.000-.000 (153%)	0.01	0.271	Green sunfish
41	0-98	(137%)	.000	.000-.000 (132%)	0.02	0.013	Gizzard shad
7502	5820-9184	(22%)	.039	.024-.055 (40%)	4.29	3.572	Largemouth bass
1	0-4	(223%)	.000	.000-.000 (223%)	0.00	0.556	Longear sunfish
			**** NOT RECORDED ****				Orangespotted sunfish
			**** NOT RECORDED ****				Pumpkinseed
			**** NOT RECORDED ****				Warmouth
412	0-927	(125%)	.001	.000-.003 (92%)	0.24	0.908	White bass
139	24-253	(82%)	.002	.000-.003 (86%)	0.08	0.589	White crappie

Table 5. Total fishing catch and catch rates, in numbers of fish.
Catch includes both harvested and released fish.

# CAUGHT	95% CI		#/HOUR	95% CI		#/HA	#/ACRE	SPECIES
97785	88385-107186	(10%)	.682	.535-.829	(22%)	138.07	55.88	All species
2	0-7	(223%)	.000	.000-.001	(220%)	0.00	0.00	Bluegill x Green
4	0-13	(212%)	.000	.000-.000	(212%)	0.01	0.00	Black bullhead
58	0-135	(132%)	.000	.000-.001	(113%)	0.08	0.03	Black crappie
4330	2995-5665	(31%)	.091	.000-.186	(104%)	6.11	2.47	Bluegill
38	8-67	(78%)	.000	.000-.000	(95%)	0.05	0.02	Carp
24879	21419-28338	(14%)	.181	.146-.216	(19%)	35.13	14.22	Channel catfish
2	0-8	(212%)	.000	.000-.000	(212%)	0.00	0.00	Flathead catfish
518	256-780	(51%)	.012	.001-.023	(89%)	0.73	0.30	Green sunfish
3404	0-7528	(121%)	.013	.000-.027	(117%)	4.81	1.95	Gizzard shad
61088	54847-67328	(10%)	.347	.231-.464	(33%)	86.26	34.91	Largemouth bass
2	0-7	(223%)	.000	.000-.000	(223%)	0.00	0.00	Longear sunfish
31	0-79	(152%)	.000	.000-.000	(152%)	0.04	0.02	Orangespotted sunfish
421	0-1088	(159%)	.002	.000-.007	(222%)	0.59	0.24	Pumpkinseed
139	5-273	(96%)	.001	.000-.002	(106%)	0.20	0.08	Warmouth
1529	241-2817	(84%)	.010	.000-.022	(116%)	2.16	0.87	White bass
1340	333-2347	(75%)	.024	.000-.053	(124%)	1.89	0.77	White crappie

Table 6. Total fishing catch and catch rates, in kilograms.

KG CAUGHT	95% CI		KG/HOUR	95% CI		KG/HA	AVE KG	SPECIES
69113	60878-77347	(12%)	.352	.289-.415	(18%)	97.59	0.707	All species
0	0-0	(223%)	.000	.000-.000	(220%)	0.00	0.022	Bluegill x Green
0	0-0	(212%)	.000	.000-.000	(211%)	0.00	0.033	Black bullhead
9	0-28	(212%)	.000	.000-.000	(181%)	0.01	0.154	Black crappie
168	94-242	(44%)	.002	.000-.005	(95%)	0.24	0.039	Bluegill
33	6-60	(81%)	.000	.000-.000	(92%)	0.05	0.896	Carp
6583	5397-7769	(18%)	.046	.035-.057	(25%)	9.30	0.265	Channel catfish
0	0-1	(211%)	.000	.000-.000	(211%)	0.00	0.173	Flathead catfish
32	8-57	(76%)	.001	.000-.001	(102%)	0.05	0.062	Green sunfish
21	0-51	(143%)	.000	.000-.000	(138%)	0.03	0.006	Gizzard shad
61486	53363-69609	(13%)	.297	.236-.358	(21%)	86.82	1.007	Largemouth bass
1	0-2	(226%)	.000	.000-.000	(223%)	0.00	0.252	Longear sunfish
3	0-8	(152%)	.000	.000-.000	(152%)	0.00	0.107	Orangespotted sunfish
26	0-57	(118%)	.000	.000-.000	(129%)	0.04	0.062	Pumpkinseed
19	0-37	(98%)	.000	.000-.000	(95%)	0.03	0.136	Warmouth
538	0-1196	(122%)	.003	.001-.005	(77%)	0.76	0.352	White bass
193	63-323	(67%)	.003	.000-.006	(104%)	0.27	0.144	White crappie

Table 7. Total fishing catch and catch rates, in pounds.

LB CAUGHT	95% CI		LB/HOUR	95% CI		LB/ACRE	AVE LB	SPECIES
152367	134213-170521	(12%)	.776	.638-.914	(18%)	87.07	1.558	All species
0	0-0	(220%)	.000	.000-.000	(223%)	0.00	0.050	Bluegill x Green
0	0-1	(212%)	.000	.000-.000	(211%)	0.00	0.072	Black bullhead
20	0-62	(212%)	.000	.000-.000	(181%)	0.01	0.340	Black crappie
371	207-534	(44%)	.005	.000-.011	(95%)	0.21	0.086	Bluegill
73	14-133	(81%)	.000	.000-.000	(92%)	0.04	1.976	Carp
14514	11899-17129	(18%)	.101	.077-.126	(25%)	8.29	0.583	Channel catfish
1	0-2	(211%)	.000	.000-.000	(211%)	0.00	0.381	Flathead catfish
71	17-125	(76%)	.001	.000-.003	(102%)	0.04	0.138	Green sunfish
46	0-113	(143%)	.000	.000-.000	(138%)	0.03	0.014	Gizzard shad
135553	117645-153461	(13%)	.654	.520-.789	(21%)	77.46	2.219	Largemouth bass
1	0-4	(223%)	.000	.000-.000	(223%)	0.00	0.556	Longear sunfish
7	0-18	(152%)	.000	.000-.000	(152%)	0.00	0.236	Orangespotted sunfish
58	0-126	(118%)	.000	.000-.001	(129%)	0.03	0.137	Pumpkinseed
41	1-82	(98%)	.000	.000-.000	(95%)	0.02	0.299	Warmouth
1186	0-2637	(122%)	.006	.001-.011	(77%)	0.68	0.776	White bass
425	138-711	(67%)	.007	.000-.014	(104%)	0.24	0.317	White crappie

1999 NEWTON LAKE DAY CREEL 01/01/1999 - 12/31/1999

Table 8. Hours per completed trip and supplementary questions for all trips.

	MEAN	95% CI		MIN	MAX	#SAMPLES
HOURS PER COMPLETED TRIP*						
BOAT	5.7	5.6-5.8	(2%)	0.1	21.0	2940
SHORE	2.9	2.4-3.4	(17%)	0.7	8.3	34
BOAT & SHORE	5.6	5.5-5.7	(2%)	0.1	21.0	2974
MILES TRAVELED	60.4	56.3-64.5	(7%)	1	5000	3026
SUCCESS RATING (1-10)	4.6	4.5-4.7	(2%)	1	10	3006

*2378 samples were from split interviews of completed trips.
95.6% of all 3111 interviews were completed trips.

ILLEGAL HARVEST: Clerk noted 0 out of 3111 interviews with illegal harvests.

Table 9. Frequency distribution of angler party size for all interviews.

PARTY SIZE:	1	2	3	4	5	6	7	8	9	10+
BOAT INTERVIEWS	865	1878	215	31	2					
SHORE INTERVIEWS	50	29	23	14	3		1			

Table 10. Number of interviews (and %) per species sought for all interviews.

154	(5.0%)	ANY	All species
6	(0.2%)	BLG	Bluegill
378	(12.2%)	CCF	Channel catfish
6	(0.2%)	CRP	Crappie spp.
2	(0.1%)	GZS	Gizzard shad
2559	(82.3%)	LMB	Largemouth bass
6	(0.2%)	WHB	White bass

1999 NEWTON LAKE DAY CREEL 01/01/1999 - 12/31/1999

Table 11. Number of anglers with a given harvest & release for completed trips

# OF FISH:		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Black bullhead																	
	HARVEST	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5375	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Black crappie																	
	HARVEST	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5373	2	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Bluegill																	
	HARVEST	5361	4	6	-	-	-	2	-	-	4	-	-	-	-	-	-
	RELEASE	5096	164	26	25	7	11	13	3	1	-	8	-	5	2	2	14
Carp																	
	HARVEST	5372	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5365	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Channel catfish																	
	HARVEST	4788	78	96	54	61	59	32	39	19	9	39	9	8	13	14	59
	RELEASE	4328	336	168	125	45	75	61	17	28	22	67	11	15	15	8	56
Flathead catfish																	
	HARVEST	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5375	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish																	
	HARVEST	5366	8	1	2	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5314	52	6	2	2	-	-	-	-	-	-	-	-	-	-	1
Gizzard shad																	
	HARVEST	5370	-	-	-	-	-	-	-	-	-	-	-	-	4	-	3
	RELEASE	5372	4	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Largemouth bass																	
	HARVEST	4986	264	63	49	3	2	1	1	-	-	8	-	-	-	-	-
	RELEASE	1325	810	735	552	423	391	247	168	173	101	89	47	56	46	29	185
Longear sunfish																	
	HARVEST	5375	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Orangespotted sunfish																	
	HARVEST	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5372	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumpkinseed																	
	HARVEST	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RELEASE	5366	-	2	3	2	2	-	-	-	-	2	-	-	-	-	-

Table 11 (continued). Number of anglers with a given harvest & release for completed trips

# OF FISH:		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Warmouth																	
HARVEST	5377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	5359	8	4	4	-	2	-	-	-	-	-	-	-	-	-	-	-
White bass																	
HARVEST	5359	7	2	-	-	2	-	2	-	-	-	-	-	-	-	-	5
RELEASE	5259	80	21	-	1	-	2	-	6	2	1	-	1	2	-	2	
White crappie																	
HARVEST	5357	8	4	2	-	-	-	-	-	-	6	-	-	-	-	-	
RELEASE	5318	38	-	4	2	-	2	3	2	-	-	-	-	1	-	7	

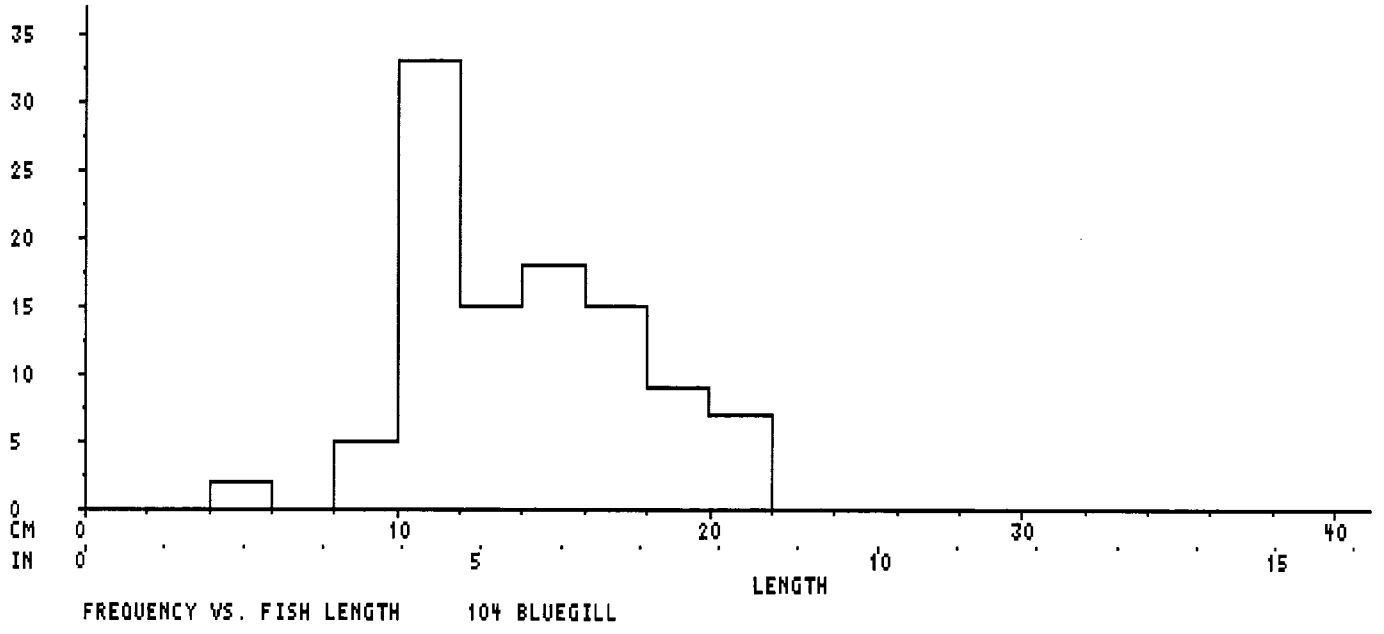

Figure 1. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of bluegill harvested by all anglers.

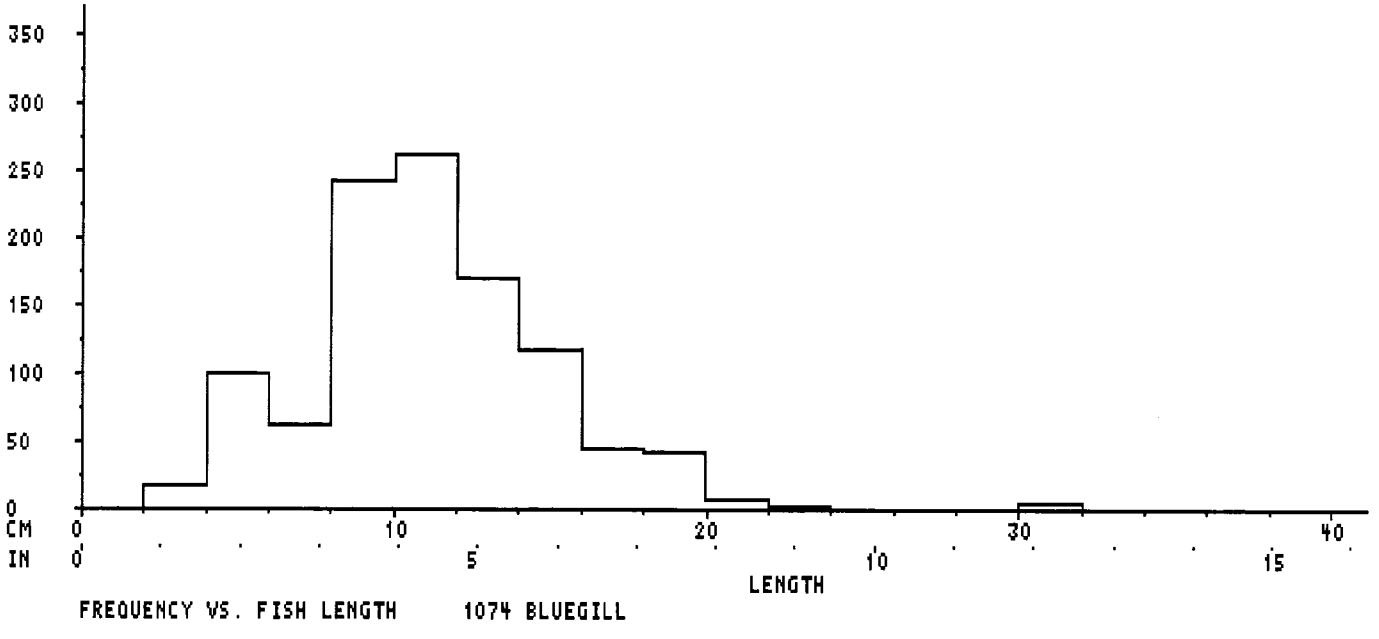

Figure 2. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of bluegill released by all anglers. Note the difference in scale from Figure 1.

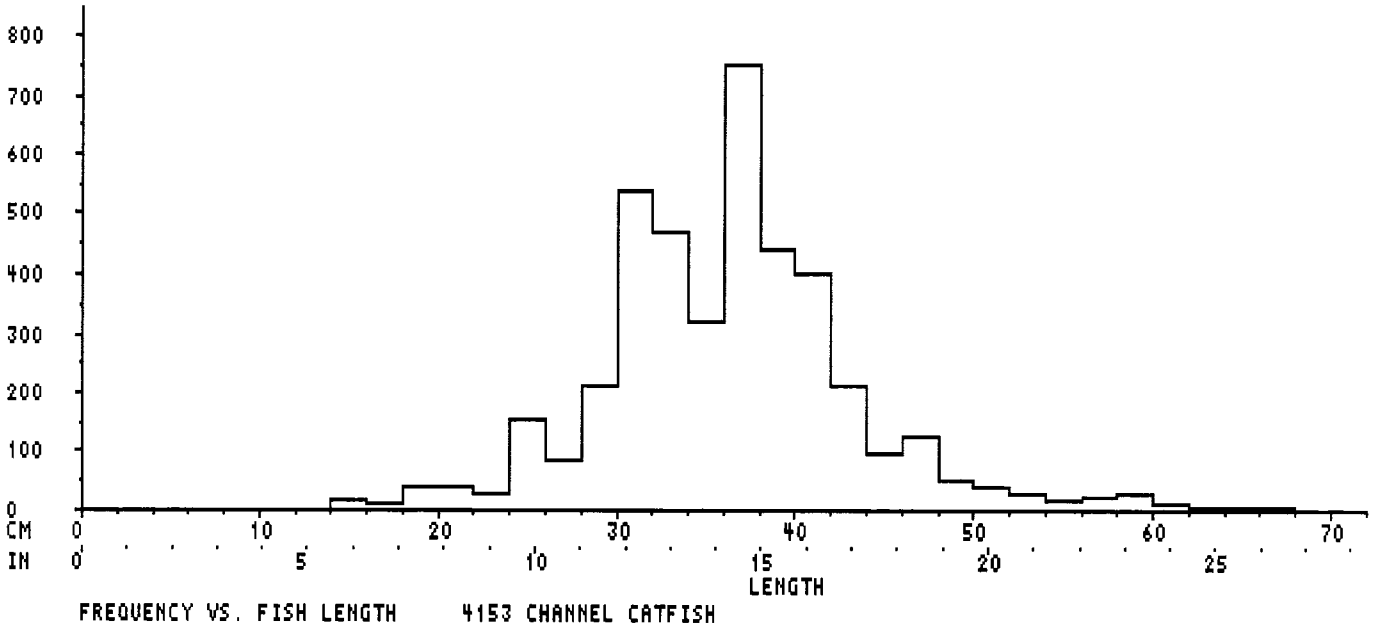

Figure 3. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of channel catfish harvested by all anglers.

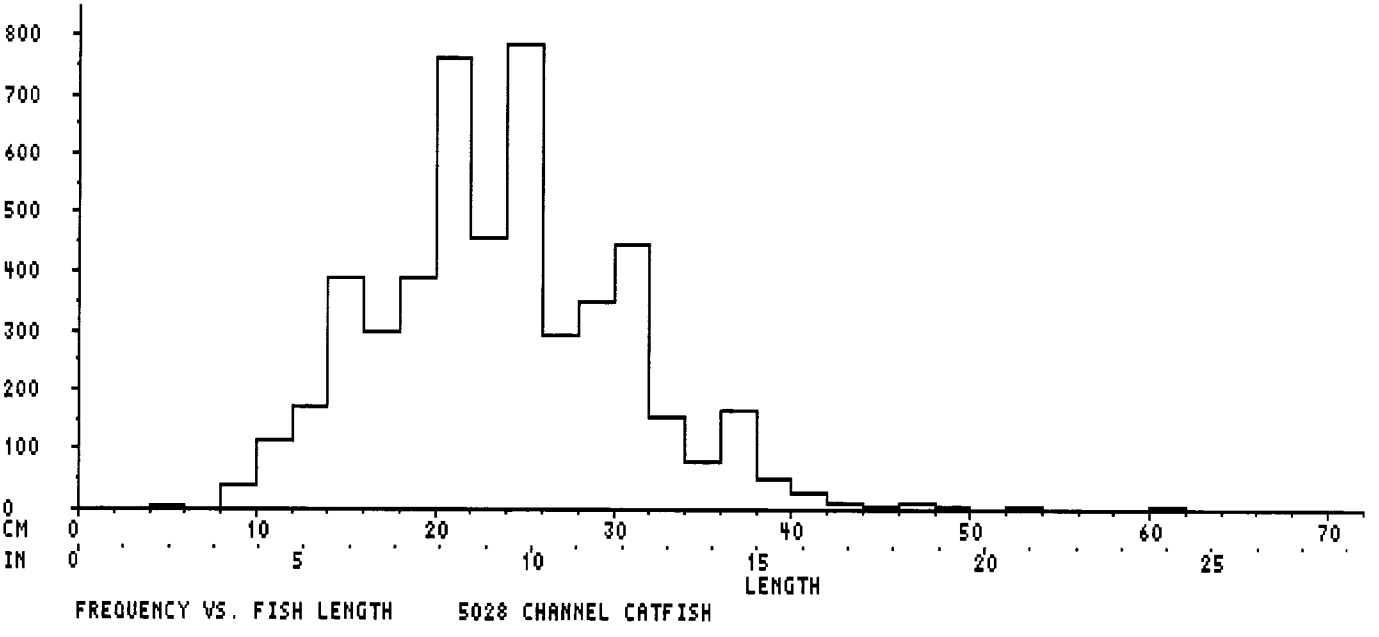

Figure 4. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of channel catfish released by all anglers.

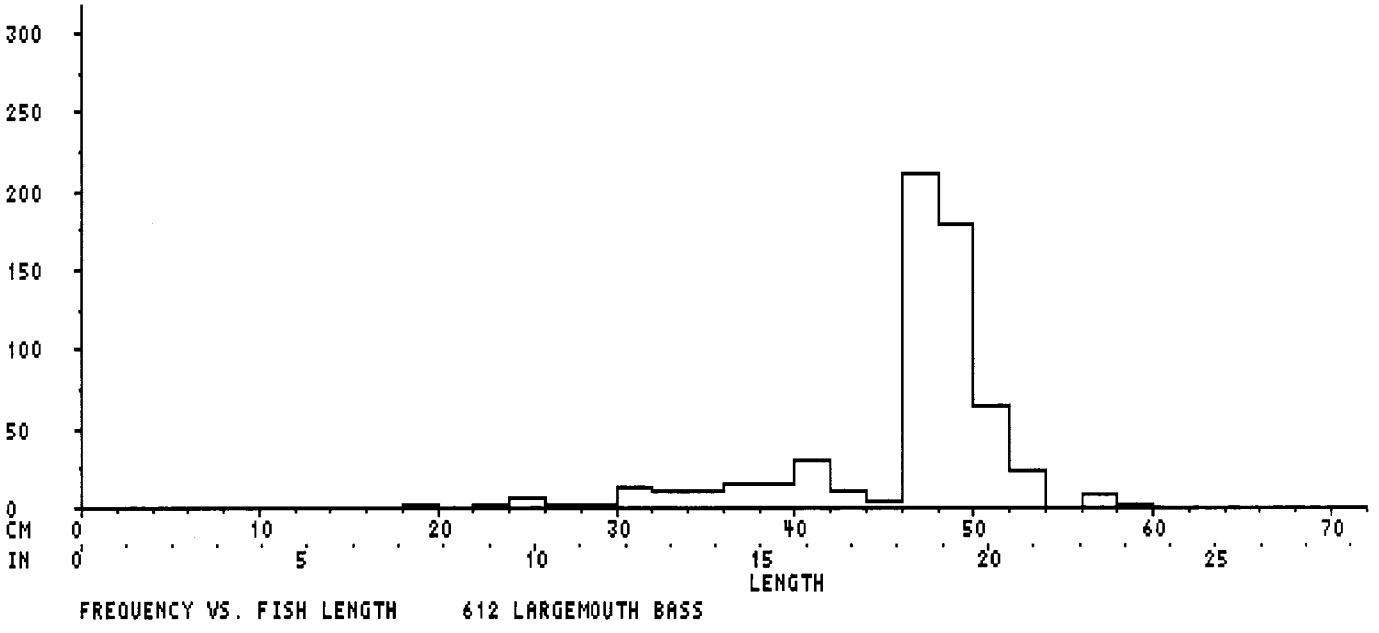

Figure 5. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of largemouth bass harvested by all anglers.

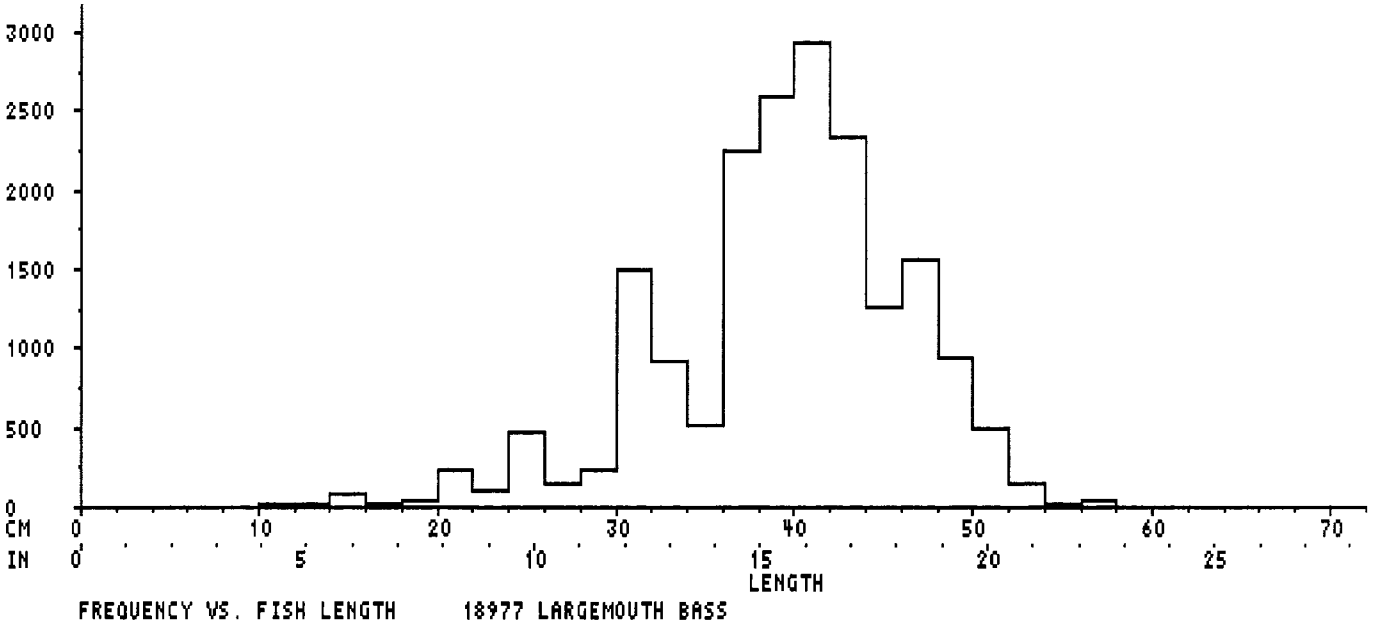

Figure 6. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of largemouth bass released by all anglers. Note the difference in scale from Figure 5.

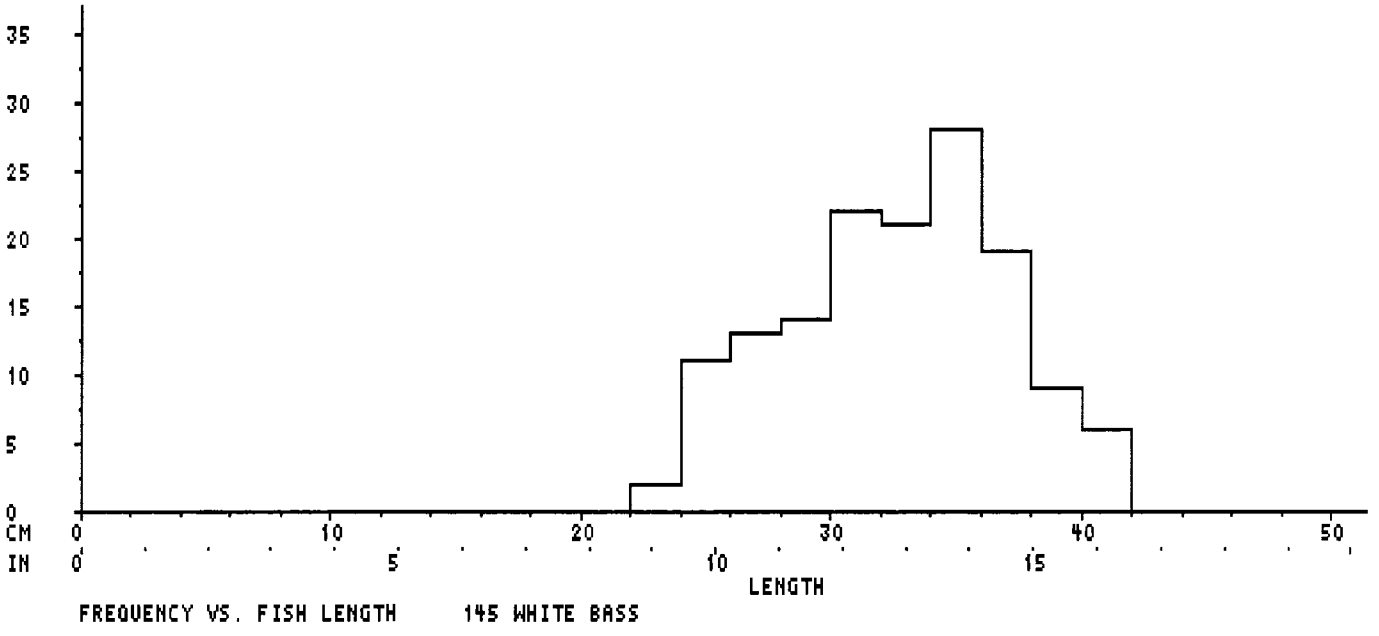

Figure 7. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of white bass harvested by all anglers.

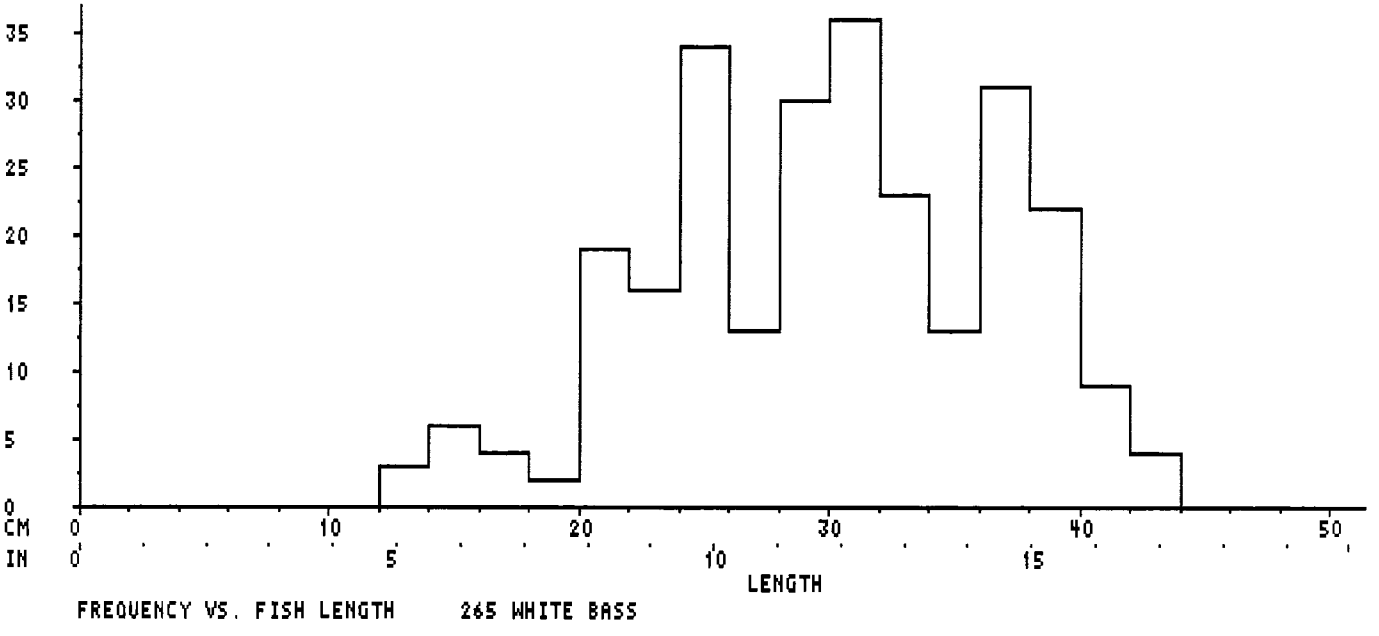

Figure 8. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of white bass released by all anglers.

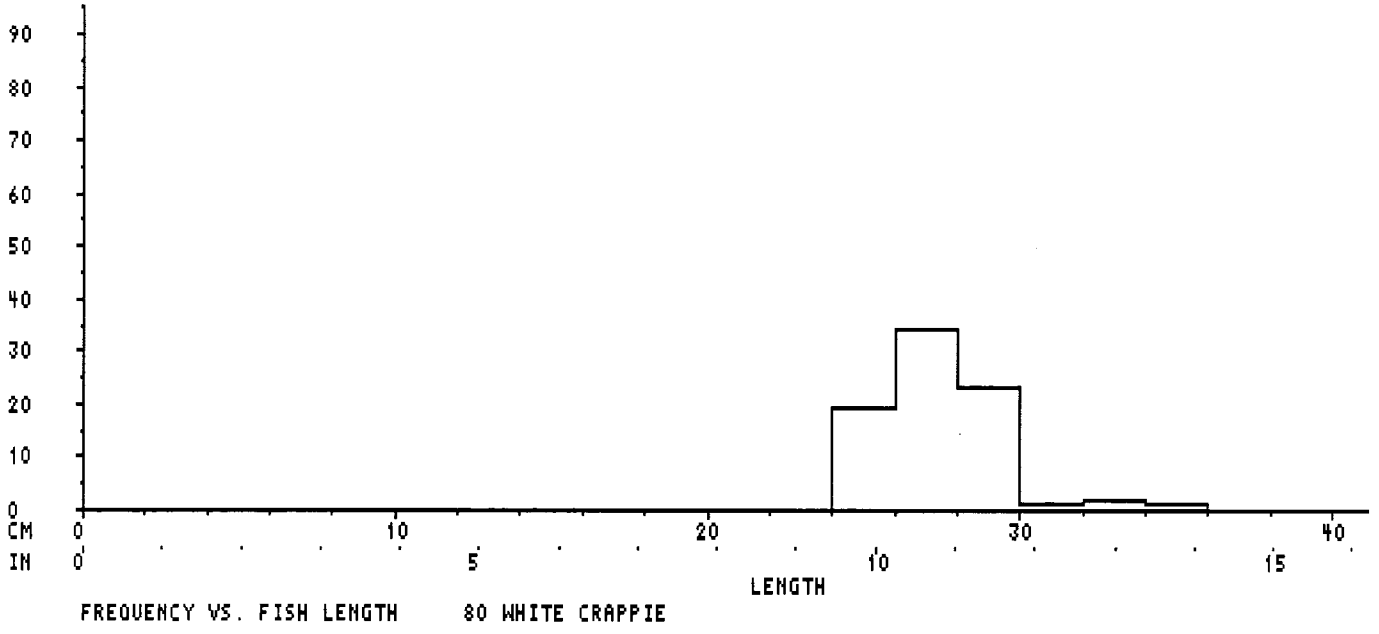

Figure 9. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of white crappie harvested by all anglers.

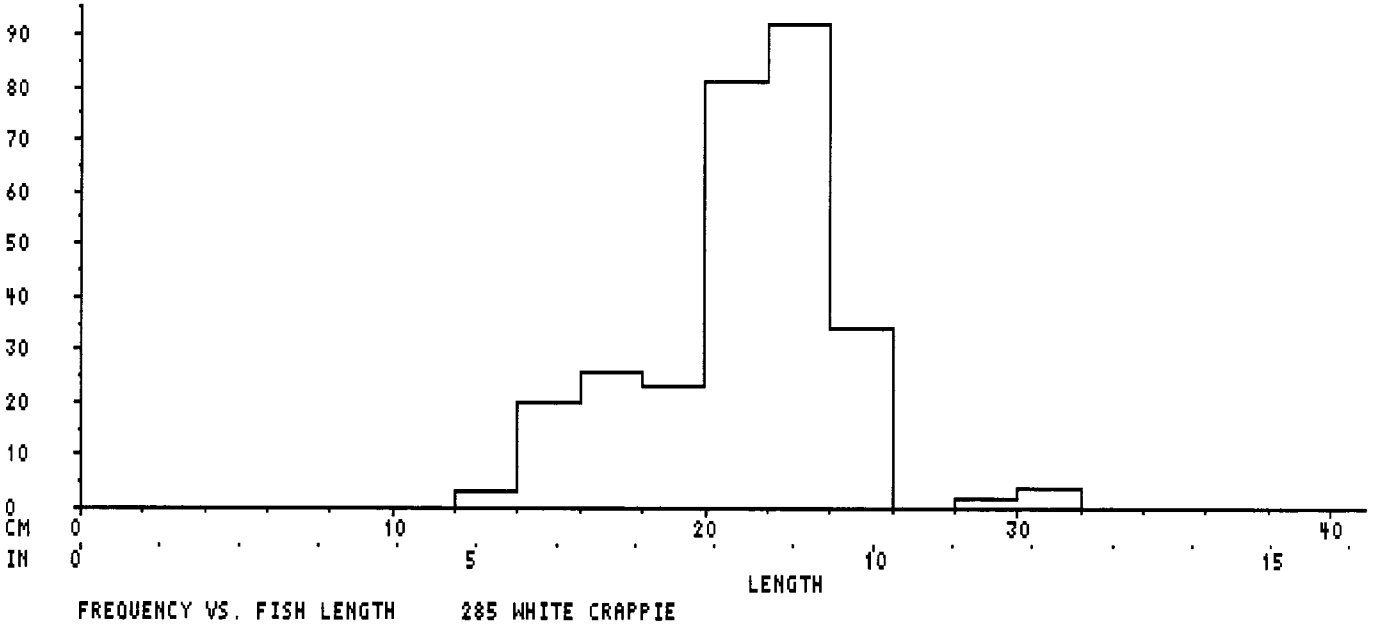

Figure 10. Newton Lake 1999 day creel 1/01 through 12/31. Length-frequency histogram of white crappie released by all anglers.

ILLINOIS NATURAL HISTORY SURVEY
CENTER FOR AQUATIC ECOLOGY
2000-2001 CREEL SURVEY RESULTS

2000-2001 NEWTON LAKE
1750 ACRES
REGION 5, DISTRICT 19

STRATIFICATION SUMMARY:

Day creel only.
Results cover **04/09/2000 through 03/15/2001**
Year periods stratified.
Fishing modes (boat vs. shore) stratified.
Day types (weekday vs. weekend/holiday) stratified.
Day periods (morning, midday, and afternoon) stratified.

SAMPLING RATIO: 341/1023 = 33.3%

NUMBER OF INTERVIEWS: 3096

Table 1. Total fishing effort, by fishing mode and day type.

FISHING MODE	DAYTYPE	ANGLER-HOURS	95% CI		HOURS/ACRE	95% CI		% EFF
BOAT	WEEKDAY	30081	25165-34997	(16%)	17	14-20	(16%)	15%
	HOLIDAY	33870	30464-37276	(10%)	19	17-21	(10%)	31%
	TOTAL	63951	58190-69712	(9%)	37	33-40	(9%)	23%
SHORE	WEEKDAY	5686	4651-6721	(18%)	3	3-4	(18%)	3%
	HOLIDAY	6013	5211-6815	(13%)	3	3-4	(13%)	3%
	TOTAL	11699	10389-13008	(11%)	7	6-7	(11%)	3%
BOAT & SHORE	WEEKDAY	35767	30755-40779	(14%)	20	18-23	(14%)	13%
	HOLIDAY	39883	36383-43382	(9%)	23	21-25	(9%)	26%
	TOTAL	75650	69742-81557	(8%)	43	40-47	(8%)	20%

Table 2. Total fishing harvest and harvest rates, in numbers of fish.

# HARVESTED	95% CI		#/HOUR	95% CI	#/HA	#/ACRE	SPECIES
26917	18865-34968	(30%)	.382	.233-.532 (39%)	38.01	15.38	All species
			**** NOT RECORDED ****				Black bullhead
19	0-78	(318%)	.000	.000-.001 (430%)	0.03	0.01	Black crappie
601	0-2287	(280%)	.060	.000-.174 (188%)	0.85	0.34	Bluegill
82	0-267	(226%)	.004	.000-.010 (161%)	0.12	0.05	Carp
13371	10576-16165	(21%)	.200	.107-.292 (46%)	18.88	7.64	Channel catfish
			**** NOT RECORDED ****				Flathead catfish
220	0-666	(202%)	.006	.000-.027 (349%)	0.31	0.13	Green sunfish
5613	288-10937	(95%)	.050	.007-.092 (85%)	7.93	3.21	Gizzard shad
596	237-955	(60%)	.003	.002-.005 (44%)	0.84	0.34	Largemouth bass
15	0-208	(1271%	.001	.000-.003 (430%)	0.02	0.01	Pumpkinseed
			**** NOT RECORDED ****				Rock bass
			**** NOT RECORDED ****				Warmouth
5587	0-11542	(107%)	.052	.000-.106 (103%)	7.89	3.19	White bass
813	372-1254	(54%)	.007	.001-.012 (84%)	1.15	0.46	White crappie
			**** NOT RECORDED ****				Yellow bullhead

Table 3. Total fishing harvest and harvest rates, in kilograms.

KG HARVESTED	95% CI		KG/HOUR	95% CI	KG/HA	AVE KG	SPECIES
7766	5498-10033	(29%)	.085	.054-.115 (36%)	10.97	0.289	All species
			**** NOT RECORDED ****				Black bullhead
7	0-38	(430%)	.000	.000-.000 (430%)	0.01	0.380	Black crappie
21	0-75	(250%)	.001	.000-.003 (169%)	0.03	0.036	Bluegill
46	0-156	(237%)	.001	.000-.004 (255%)	0.07	0.566	Carp
4566	3593-5539	(21%)	.060	.030-.091 (50%)	6.45	0.341	Channel catfish
			**** NOT RECORDED ****				Flathead catfish
7	0-16	(123%)	.000	.000-.001 (282%)	0.01	0.032	Green sunfish
61	9-114	(85%)	.001	.000-.001 (89%)	0.09	0.011	Gizzard shad
907	359-1455	(60%)	.005	.003-.008 (46%)	1.28	1.522	Largemouth bass
1	0-12	(1271%	.000	.000-.000 (1271%	0.00	0.055	Pumpkinseed
			**** NOT RECORDED ****				Rock bass
			**** NOT RECORDED ****				Warmouth
1866	0-4020	(115%)	.014	.002-.026 (87%)	2.63	0.334	White bass
283	135-432	(52%)	.002	.001-.004 (74%)	0.40	0.349	White crappie
			**** NOT RECORDED ****				Yellow bullhead

Table 4. Total fishing harvest and harvest rates, in pounds.

LB HARVESTED	95% CI		LB/HOUR	95% CI		LB/ACRE	AVE LB	SPECIES
17121	12122-22120	(29%)	.187	.120-.253	(36%)	9.78	0.636	All species
			**** NOT RECORDED ****					Black bullhead
16	0-66	(318%)	.000	.000-.001	(430%)	0.01	0.838	Black crappie
47	0-165	(250%)	.002	.000-.006	(169%)	0.03	0.078	Bluegill
102	0-344	(237%)	.002	.000-.008	(255%)	0.06	1.247	Carp
10066	7920-12212	(21%)	.133	.067-.200	(50%)	5.75	0.753	Channel catfish
			**** NOT RECORDED ****					Flathead catfish
15	0-34	(123%)	.000	.000-.001	(282%)	0.01	0.070	Green sunfish
136	20-251	(85%)	.001	.000-.002	(89%)	0.08	0.024	Gizzard shad
1999	791-3207	(60%)	.012	.006-.017	(46%)	1.14	3.355	Largemouth bass
2	0-25	(1271%	.000	.000-.000	(430%)	0.00	0.122	Pumpkinseed
			**** NOT RECORDED ****					Rock bass
			**** NOT RECORDED ****					Warmouth
4113	0-8863	(115%)	.031	.004-.058	(87%)	2.35	0.736	White bass
625	298-952	(52%)	.005	.001-.008	(74%)	0.36	0.769	White crappie
			**** NOT RECORDED ****					Yellow bullhead

Table 5. Total fishing catch and catch rates, in numbers of fish.
Catch includes both harvested and released fish.

# CAUGHT	95% CI		#/HOUR	95% CI		#/HA	#/ACRE	SPECIES
87113	73185-101040	(16%)	.918	.748-1.088	(18%)	123.00	49.78	All species
10	0-41	(318%)	.000	.000-.000	(318%)	0.01	0.01	Black bullhead
134	0-297	(122%)	.002	.000-.004	(137%)	0.19	0.08	Black crappie
4080	2619-5542	(36%)	.107	.000-.225	(109%)	5.76	2.33	Bluegill
143	0-330	(131%)	.005	.000-.011	(130%)	0.20	0.08	Carp
24060	20174-27946	(16%)	.316	.219-.414	(31%)	33.97	13.75	Channel catfish
3	0-9	(223%)	.000	.000-.000	(223%)	0.00	0.00	Flathead catfish
878	330-1426	(62%)	.012	.000-.028	(146%)	1.24	0.50	Green sunfish
7498	1191-13806	(84%)	.069	.015-.122	(78%)	10.59	4.28	Gizzard shad
35437	28985-41888	(18%)	.279	.234-.325	(16%)	50.04	20.25	Largemouth bass
65	1-130	(98%)	.002	.000-.004	(136%)	0.09	0.04	Pumpkinseed
22	0-54	(150%)	.000	.000-.001	(178%)	0.03	0.01	Rock bass
114	14-214	(88%)	.001	.000-.003	(126%)	0.16	0.07	Warmouth
11929	5543-18314	(54%)	.106	.026-.186	(75%)	16.84	6.82	White bass
2734	1737-3730	(36%)	.019	.011-.027	(40%)	3.86	1.56	White crappie
7	0-25	(278%)	.000	.000-.001	(318%)	0.01	0.00	Yellow bullhead

Table 6. Total fishing catch and catch rates, in kilograms.

KG CAUGHT	95% CI		KG/HOUR	95% CI		KG/HA	AVE KG	SPECIES
38287	31752-44822	(17%)	.323	.280-.367	(13%)	54.06	0.440	All species
1	0-3	(318%)	.000	.000-.000	(278%)	0.00	0.074	Black bullhead
16	0-38	(134%)	.000	.000-.000	(130%)	0.02	0.120	Black crappie
147	95-199	(35%)	.003	.001-.004	(65%)	0.21	0.036	Bluegill
126	0-289	(129%)	.003	.000-.006	(145%)	0.18	0.886	Carp
6144	5046-7242	(18%)	.078	.046-.109	(40%)	8.68	0.255	Channel catfish
1	0-5	(223%)	.000	.000-.000	(226%)	0.00	0.526	Flathead catfish
27	11-43	(58%)	.000	.000-.001	(89%)	0.04	0.031	Green sunfish
92	15-169	(84%)	.001	.000-.002	(93%)	0.13	0.012	Gizzard shad
27614	22787-32440	(17%)	.208	.175-.241	(16%)	38.99	0.779	Largemouth bass
3	0-6	(112%)	.000	.000-.000	(187%)	0.00	0.040	Pumpkinseed
2	0-5	(176%)	.000	.000-.000	(208%)	0.00	0.081	Rock bass
13	0-28	(120%)	.000	.000-.000	(99%)	0.02	0.110	Warmouth
3395	1235-5556	(64%)	.025	.012-.039	(52%)	4.79	0.285	White bass
704	429-980	(39%)	.005	.003-.008	(47%)	0.99	0.258	White crappie
3	0-11	(278%)	.000	.000-.000	(278%)	0.00	0.429	Yellow bullhead

Table 7. Total fishing catch and catch rates, in pounds.

LB CAUGHT	95% CI		LB/HOUR	95% CI		LB/ACRE	AVE LB	SPECIES
84408	70001-98816	(17%)	.712	.617-.808	(13%)	48.23	0.969	All species
2	0-7	(318%)	.000	.000-.000	(318%)	0.00	0.162	Black bullhead
35	0-83	(134%)	.000	.000-.001	(130%)	0.02	0.265	Black crappie
323	208-438	(35%)	.006	.002-.010	(65%)	0.18	0.079	Bluegill
278	0-638	(129%)	.006	.000-.014	(145%)	0.16	1.953	Carp
13546	11124-15967	(18%)	.171	.102-.241	(40%)	7.74	0.563	Channel catfish
3	0-10	(226%)	.000	.000-.000	(226%)	0.00	1.160	Flathead catfish
60	25-94	(58%)	.001	.000-.001	(89%)	0.03	0.068	Green sunfish
202	33-372	(84%)	.002	.000-.004	(93%)	0.12	0.027	Gizzard shad
60877	50236-71519	(17%)	.458	.386-.530	(16%)	34.79	1.718	Largemouth bass
6	0-12	(112%)	.000	.000-.000	(187%)	0.00	0.089	Pumpkinseed
4	0-11	(176%)	.000	.000-.000	(208%)	0.00	0.178	Rock bass
28	0-61	(120%)	.000	.000-.000	(99%)	0.02	0.242	Warmouth
7486	2722-12249	(64%)	.056	.027-.086	(52%)	4.28	0.628	White bass
1553	945-2161	(39%)	.012	.006-.018	(47%)	0.89	0.568	White crappie
6	0-23	(278%)	.000	.000-.001	(318%)	0.00	0.945	Yellow bullhead

Table 8. Hours per completed trip and supplementary questions for all trips.

	MEAN	95% CI		MIN	MAX	#SAMPLES
HOURS PER COMPLETED TRIP*						
BOAT	5.5	5.4-5.6	(2%)	0.5	14.2	1525
SHORE	3.1	2.2-3.9	(27%)	0.8	7.2	17
BOAT & SHORE	5.4	5.3-5.6	(2%)	0.5	14.2	1542
MILES TRAVELED	53.0	50.3-55.7	(5%)	1	400	1607
SUCCESS RATING (1-10)	4.1	3.9-4.2	(3%)	1	10	1603

*1238 samples were from split interviews of completed trips.
93.2% of all 1655 interviews were completed trips.

ILLEGAL HARVEST: Clerk noted 0 out of 1655 interviews with illegal harvests.

Table 9. Frequency distribution of angler party size for all interviews.

PARTY SIZE:	1	2	3	4	5	6	7	8	9	10+
BOAT INTERVIEWS	445	958	125	18			1			
SHORE INTERVIEWS	45	43	14	3	3					

Table 10. Number of interviews (and %) per species sought for all interviews.

105	(6.3%)	ANY	All species
7	(0.4%)	BLG	Bluegill
6	(0.4%)	CAP	Carp
296	(17.9%)	CCF	Channel catfish
50	(3.0%)	CRP	Crappie spp.
3	(0.2%)	GZS	Gizzard shad
1156	(69.8%)	LMB	Largemouth bass
1	(0.1%)	SUN	Sunfish spp. excluding Crappie and Black Bass
31	(1.9%)	WHB	White bass

2000-2001 NEWTON LAKE DAY CREEL **04/09/2000 - 03/15/2001**

Table 11. Number of anglers with a given harvest & release for completed trips

# OF FISH:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Black bullhead																
HARVEST	2804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2802	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Black crappie																
HARVEST	2802	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2792	10	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Bluegill																
HARVEST	2788	8	-	2	1	3	-	-	-	-	-	-	-	2	-	-
RELEASE	2508	150	54	31	21	11	16	-	-	-	6	-	2	-	1	4
Carp																
HARVEST	2802	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2794	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Channel catfish																
HARVEST	2338	53	74	80	38	29	32	19	21	2	18	7	5	21	2	65
RELEASE	2121	257	98	90	57	31	12	13	21	5	25	11	12	11	2	38
Flathead catfish																
HARVEST	2804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2802	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Green sunfish																
HARVEST	2791	7	-	2	2	2	-	-	-	-	-	-	-	-	-	-
RELEASE	2761	17	7	9	2	-	-	-	-	-	5	3	-	-	-	-
Gizzard shad																
HARVEST	2777	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27
RELEASE	2792	2	-	-	-	-	2	-	-	-	-	-	-	2	-	6
Largemouth bass																
HARVEST	2732	46	17	9	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	955	522	345	268	173	126	96	80	53	26	33	16	19	6	15	71
Pumpkinseed																
HARVEST	2802	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2796	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Rock bass																
HARVEST	2804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2796	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warmouth																
HARVEST	2804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RELEASE	2787	12	3	-	-	-	2	-	-	-	-	-	-	-	-	-

Table 11 (continued). Number of anglers with a given harvest & release for completed trips

# OF FISH:		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
White bass																	
HARVEST	2748	8	4	6	4	2	5	-	2	3	4	4	2	-	-	12	
RELEASE	2635	69	24	15	8	8	3	-	4	-	-	-	1	2	-	35	
White crappie																	
HARVEST	2747	17	8	8	2	4	6	-	3	2	7	-	-	-	-	-	
RELEASE	2650	78	17	17	7	6	4	2	5	-	6	-	3	2	-	7	
Yellow bullhead																	
HARVEST	2804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
RELEASE	2802	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

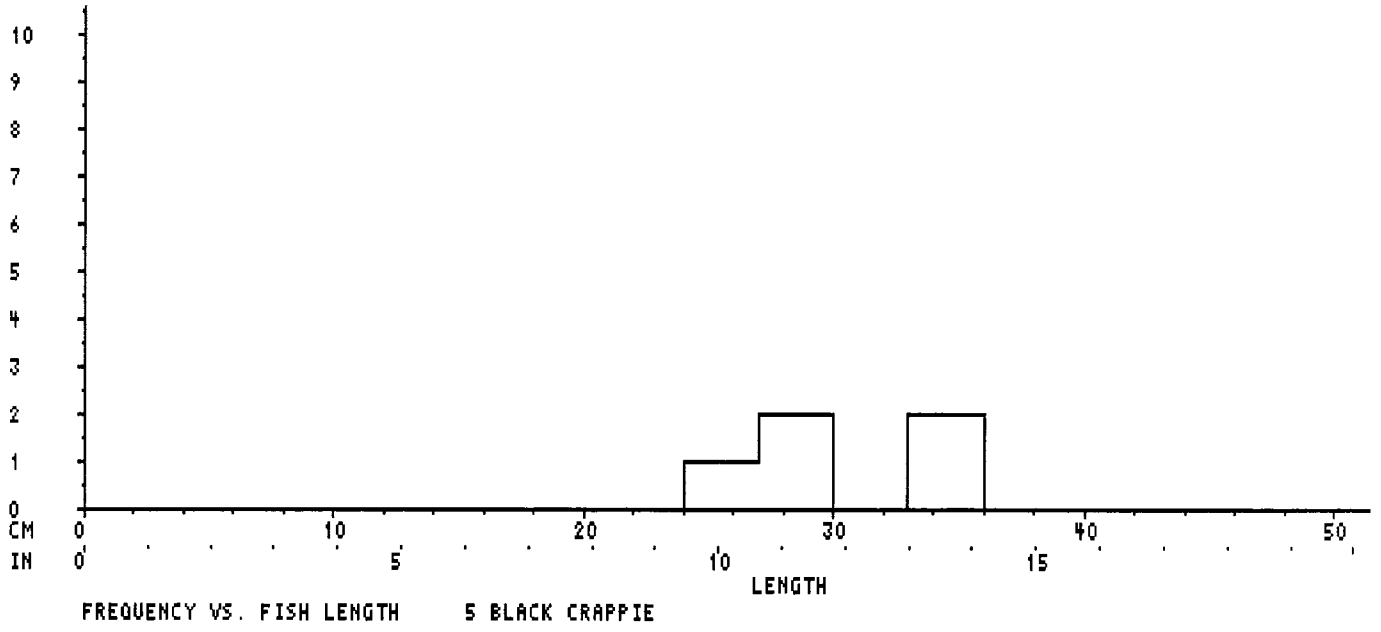

Figure 1. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of black crappie harvested by all anglers.

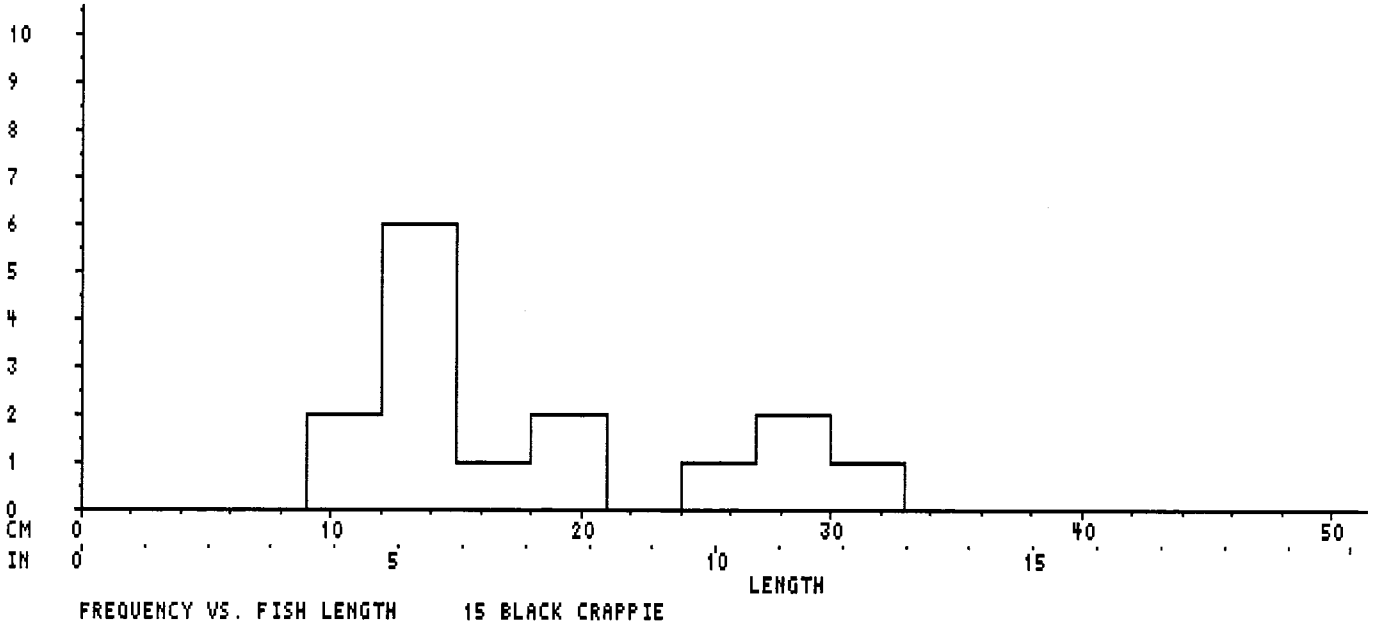

Figure 2. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of black crappie released by all anglers.

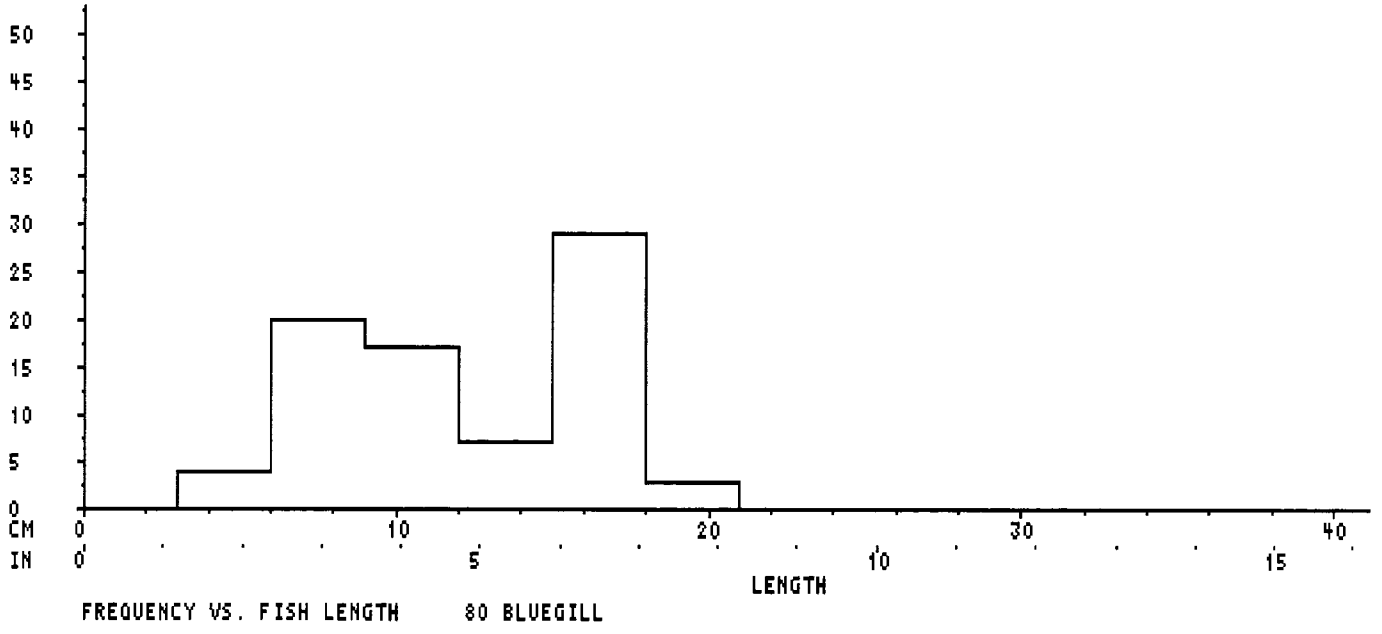

Figure 3. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of bluegill harvested by all anglers.

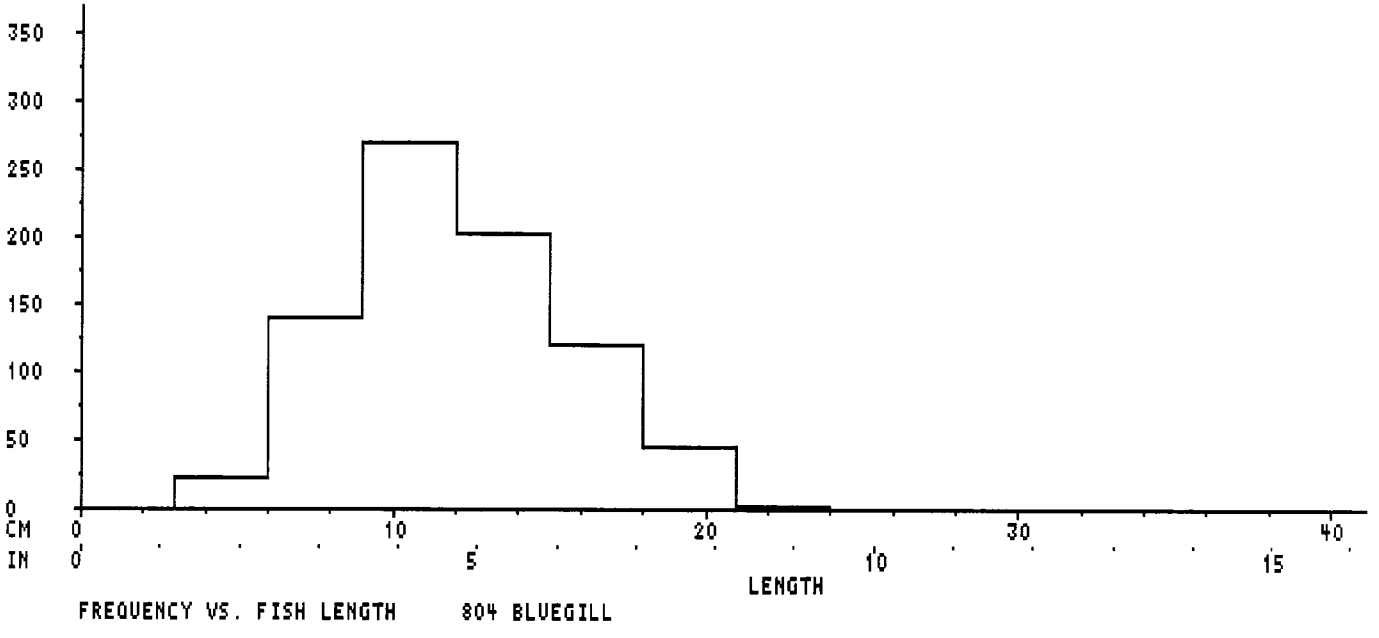

Figure 4. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of bluegill released by all anglers. Note the difference in scale from Figure 3.

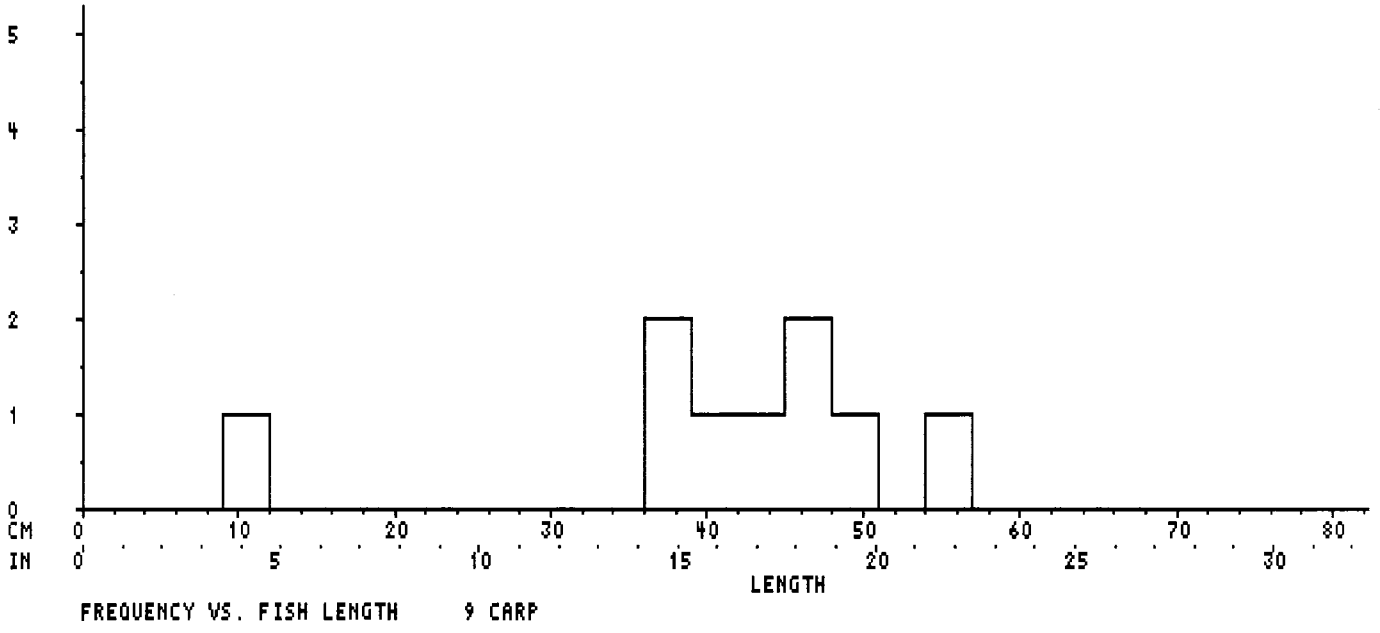

Figure 5. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of carp harvested by all anglers.

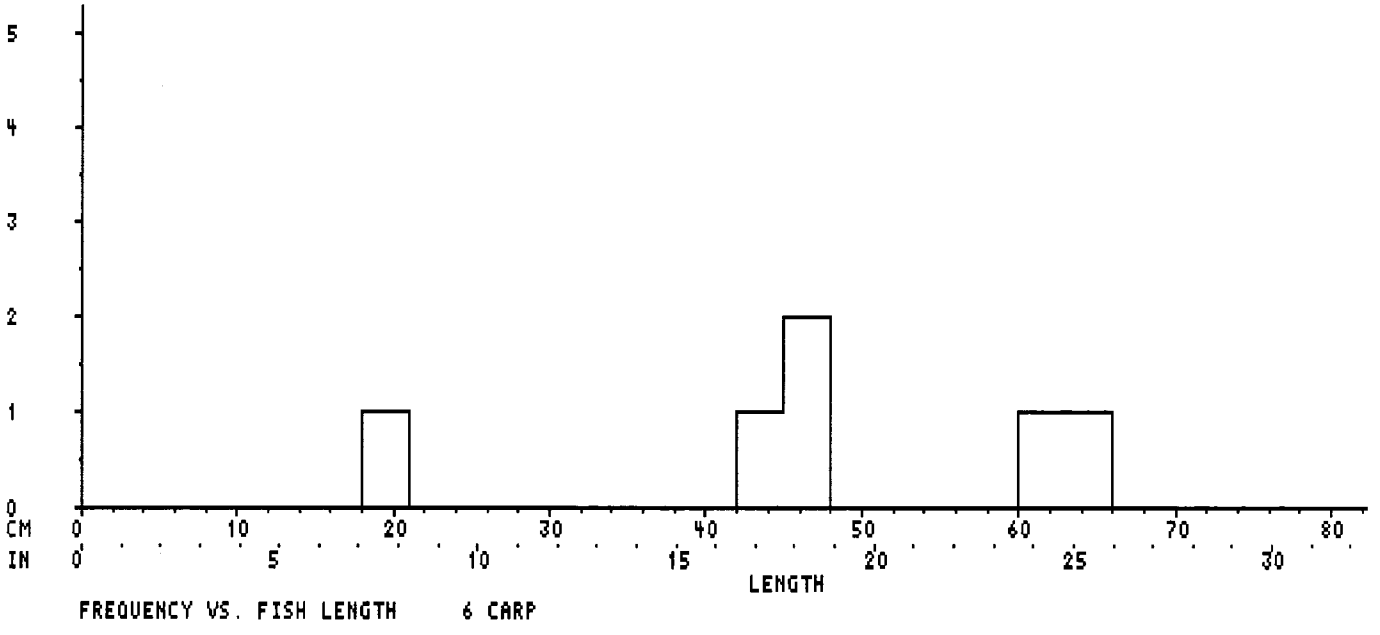

Figure 6. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of carp released by all anglers.

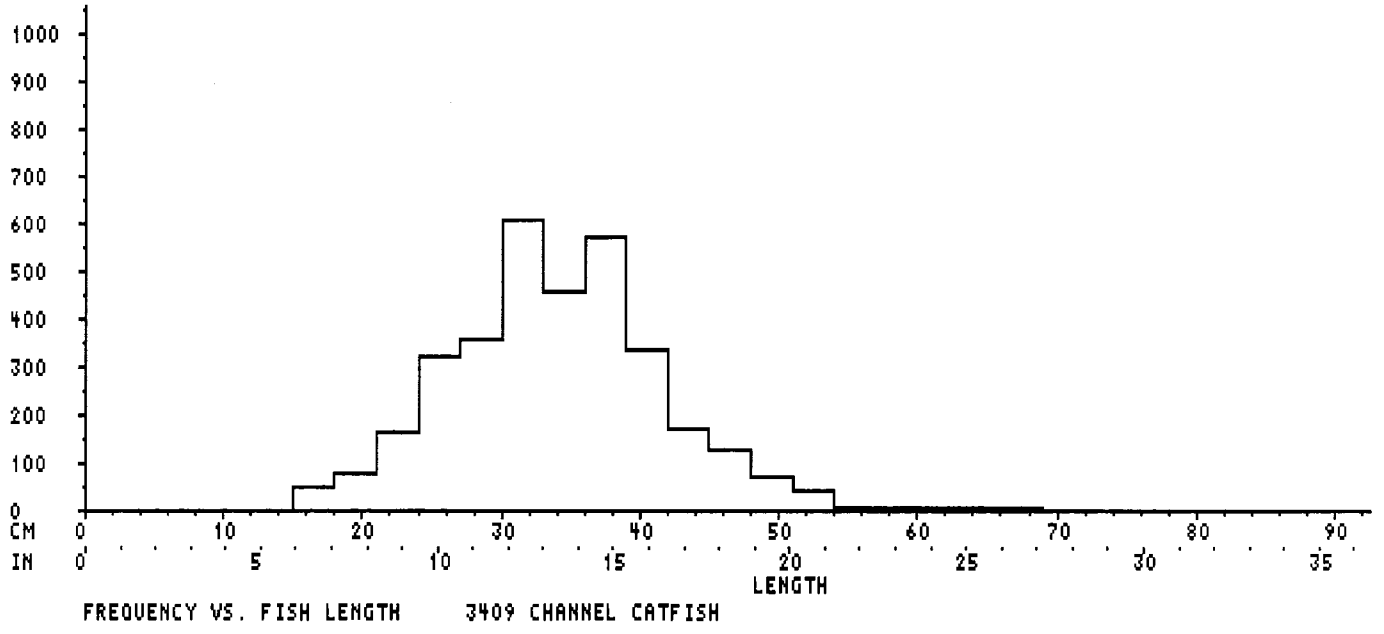

Figure 7. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of channel catfish harvested by all anglers.

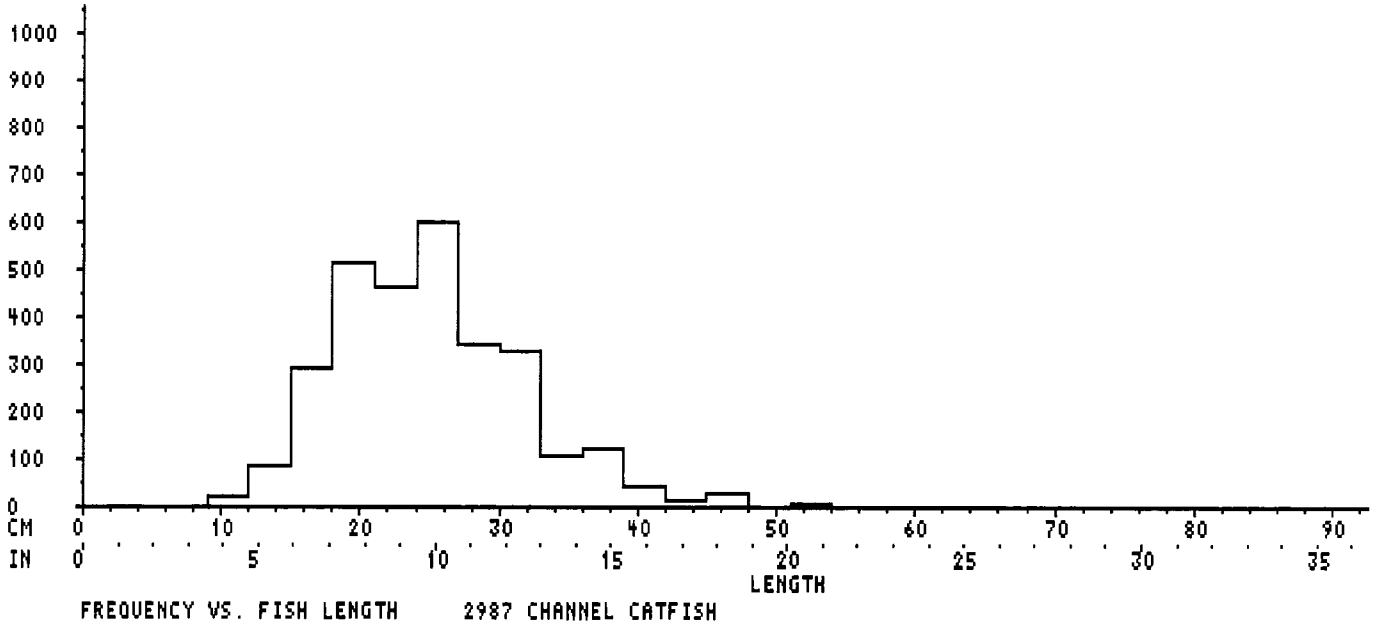

Figure 8. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of channel catfish released by all anglers.

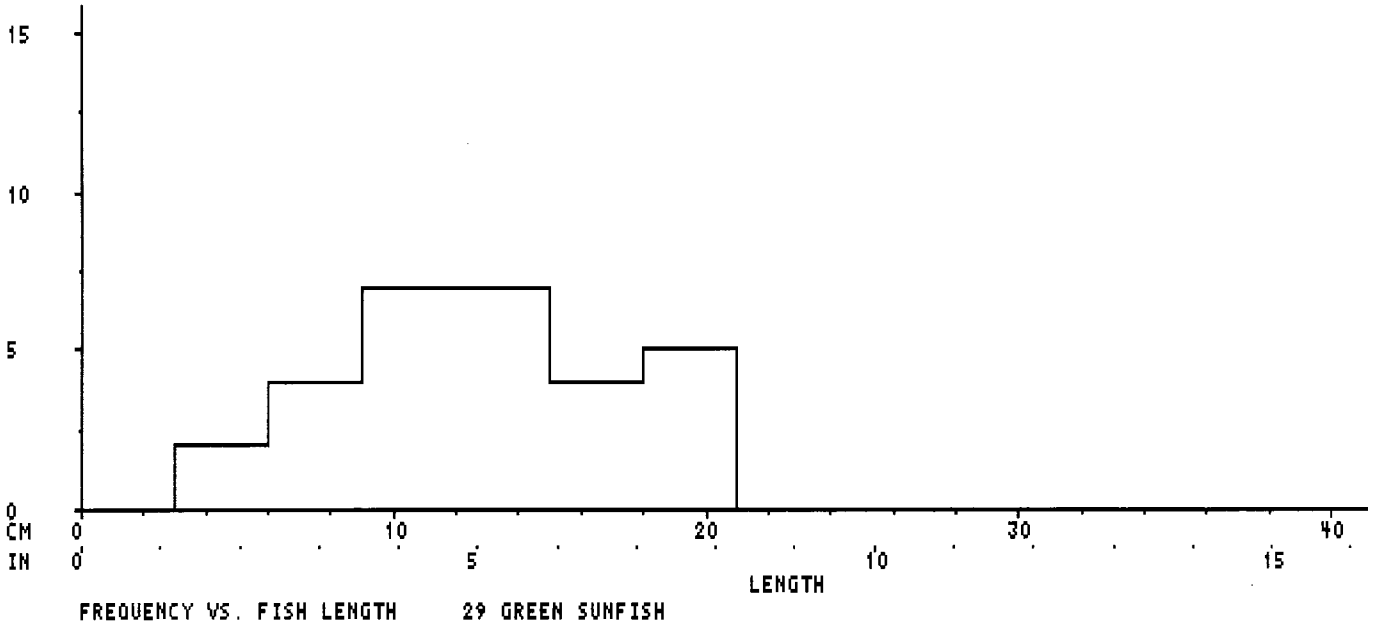

Figure 9. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of green sunfish harvested by all anglers.

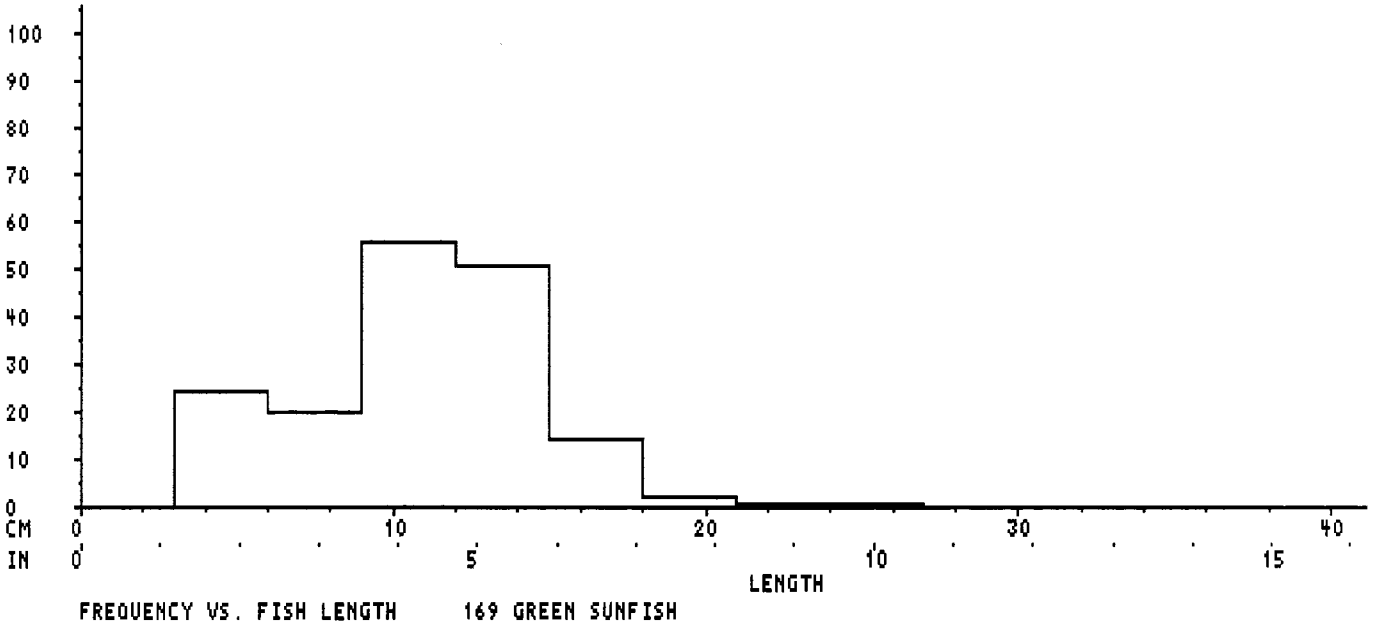

Figure 10. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of green sunfish released by all anglers. Note the difference in scale from Figure 9.

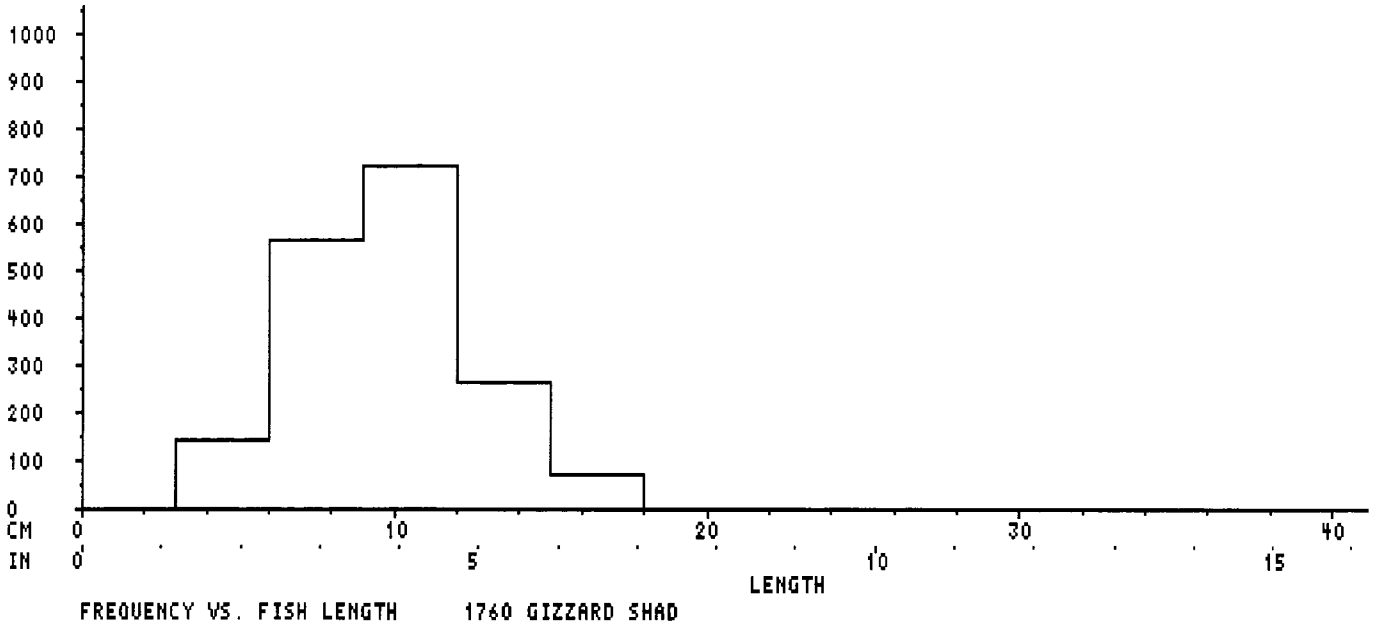

Figure 11. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of gizzard shad harvested by all anglers.

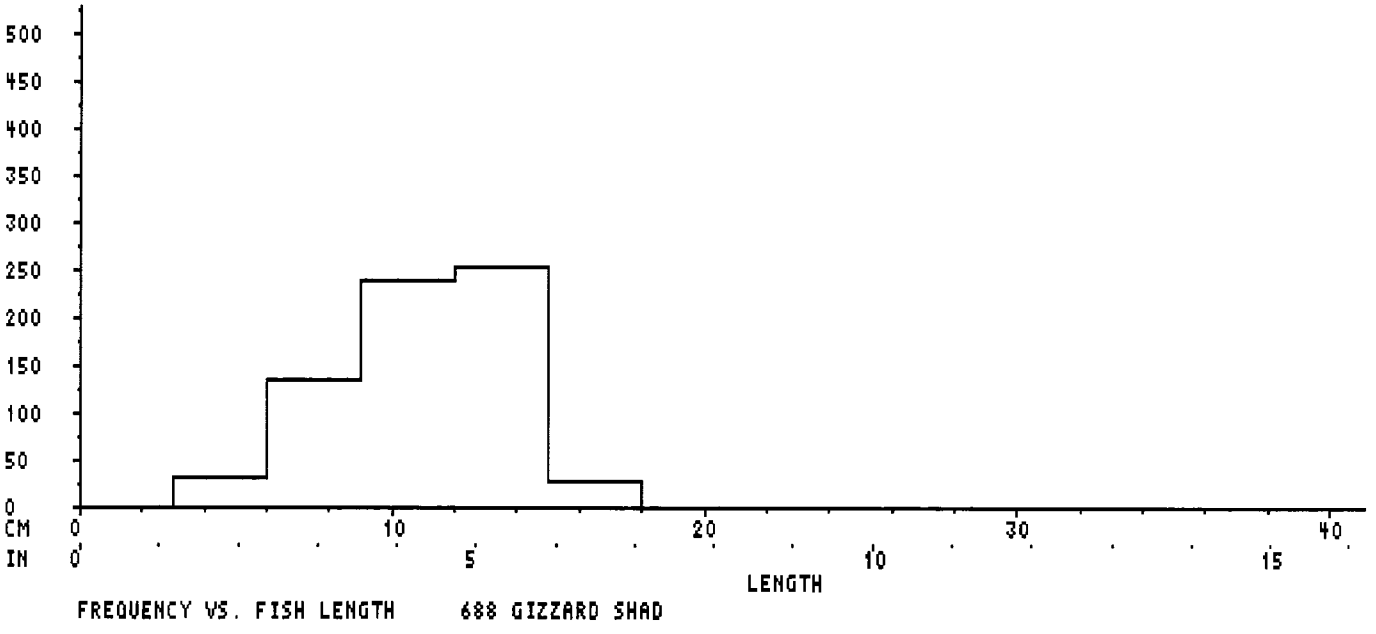

Figure 12. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of gizzard shad released by all anglers. Note the difference in scale from Figure 11.

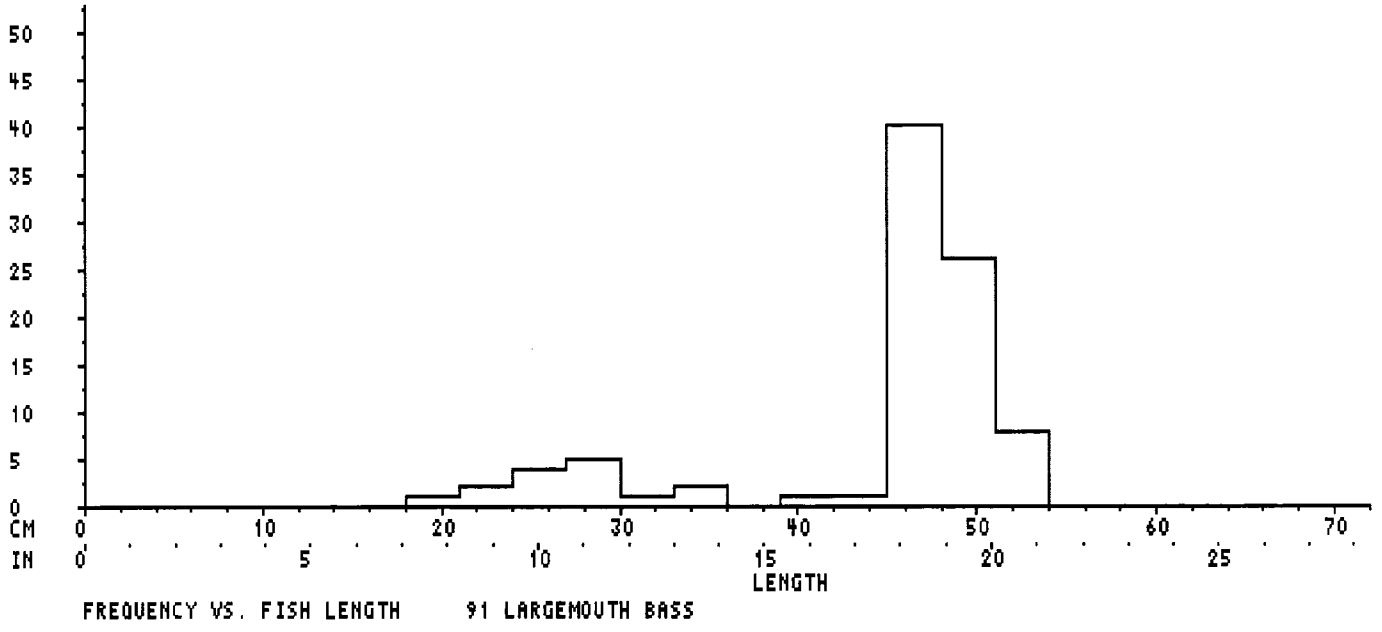

Figure 13. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of largemouth bass harvested by all anglers.

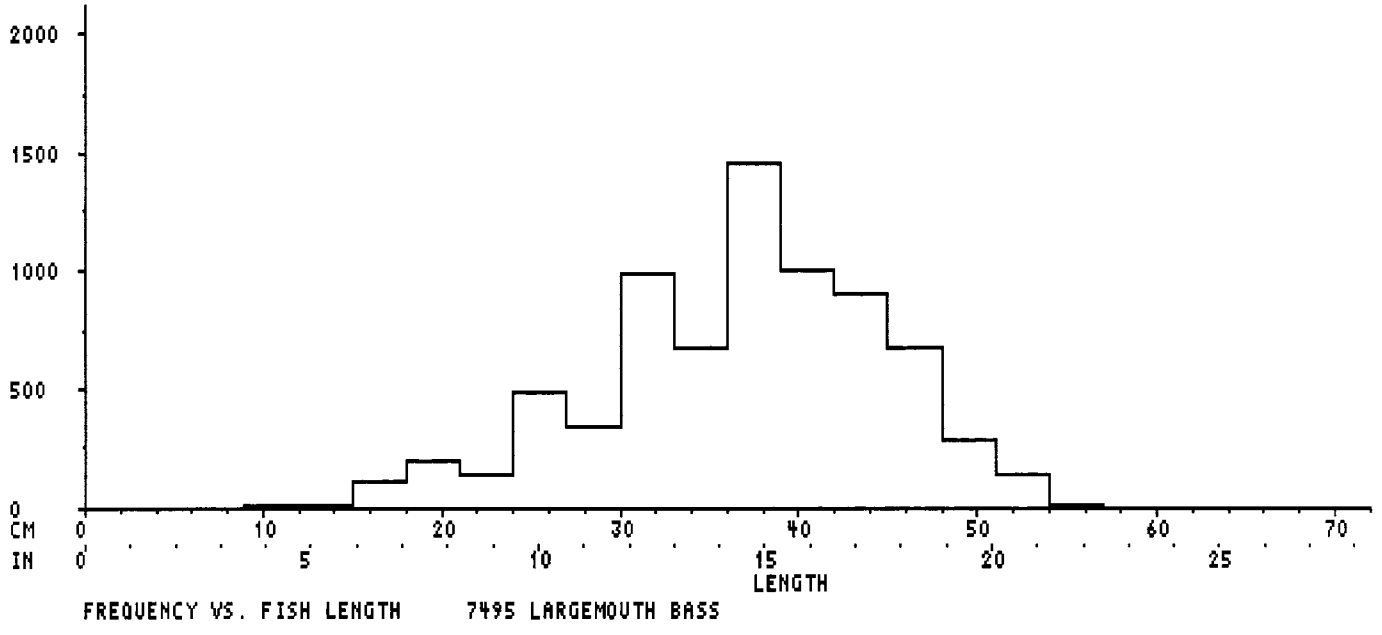

Figure 14. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of largemouth bass released by all anglers. Note the difference in scale from Figure 13.

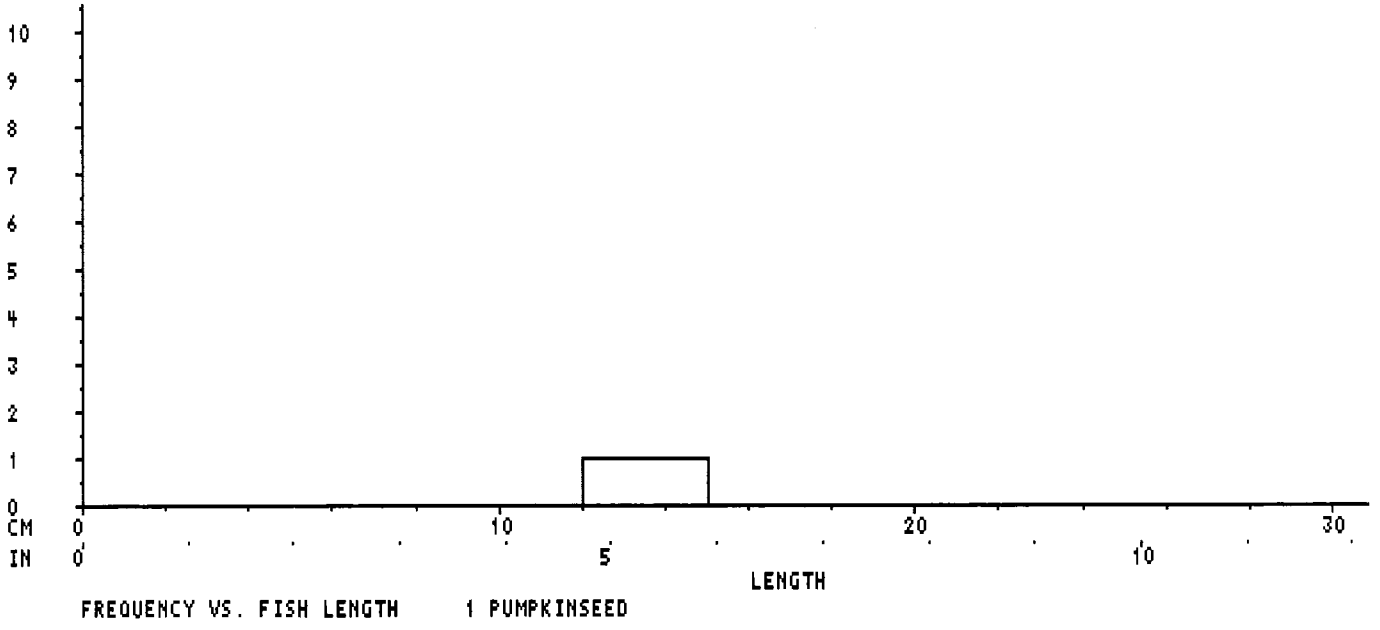

Figure 15. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of pumpkinseed harvested by all anglers.

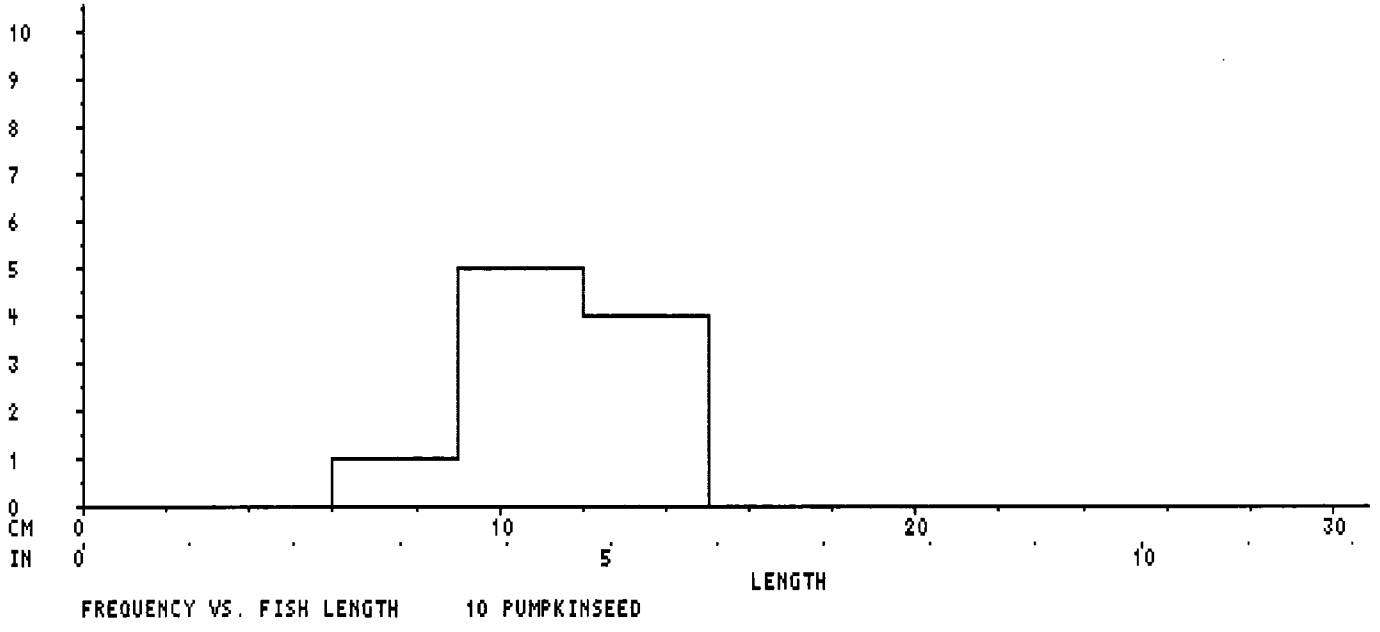

Figure 16. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of pumpkinseed released by all anglers.

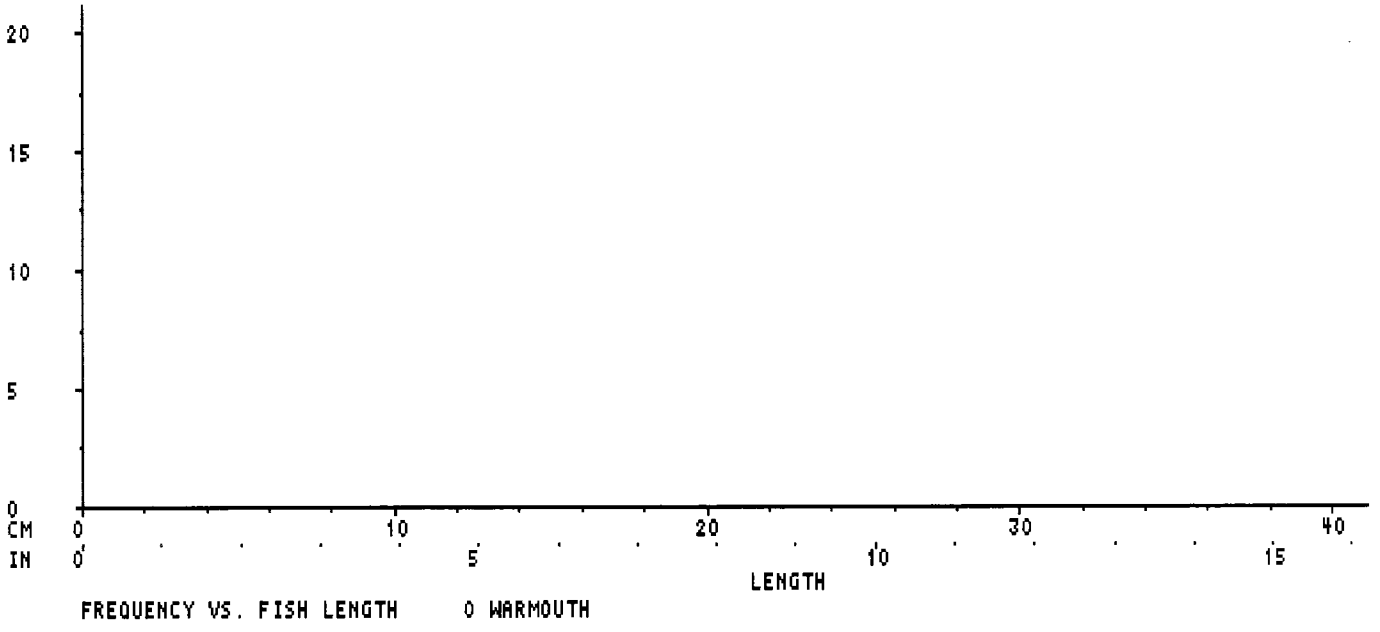

Figure 17. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of warmouth harvested by all anglers.

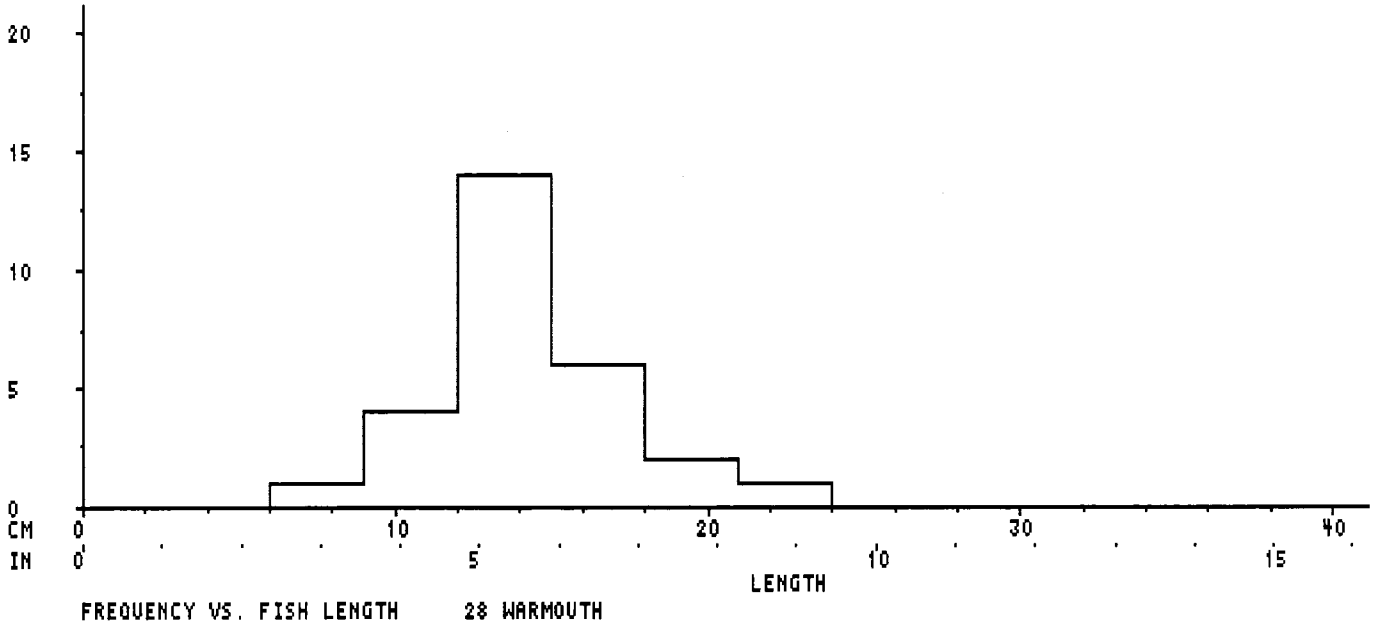

Figure 18. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of warmouth released by all anglers.

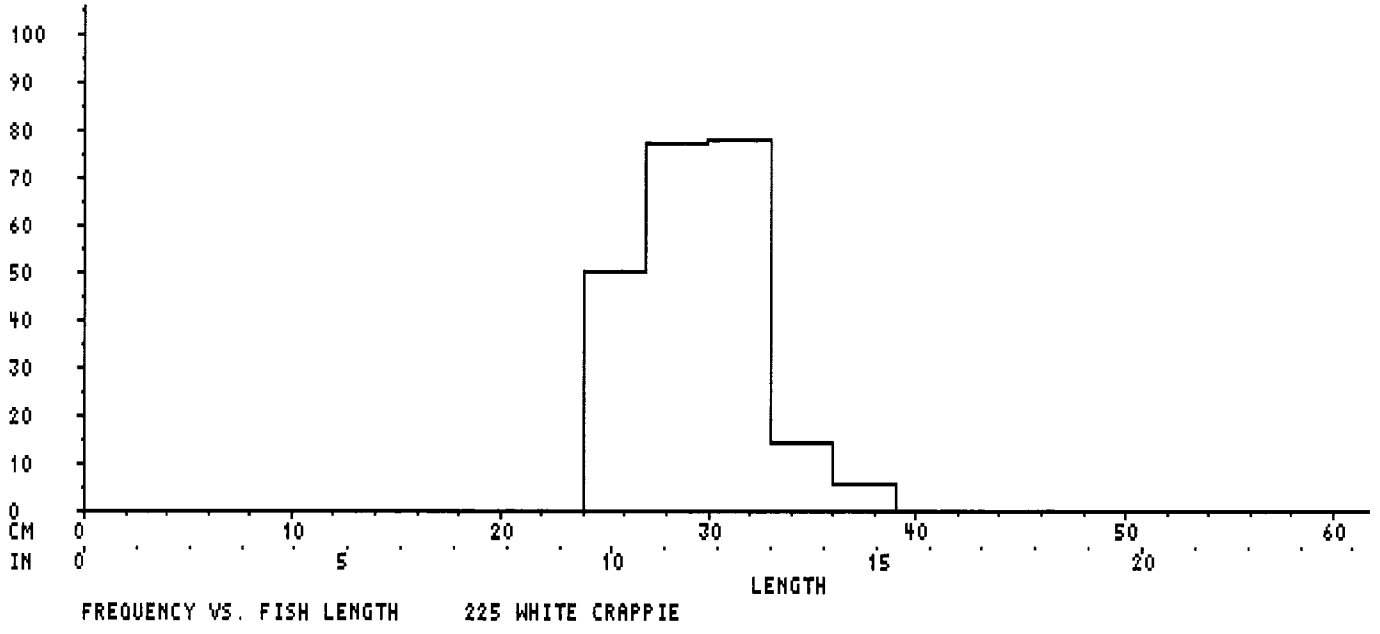

Figure 19. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of white crappie harvested by all anglers.

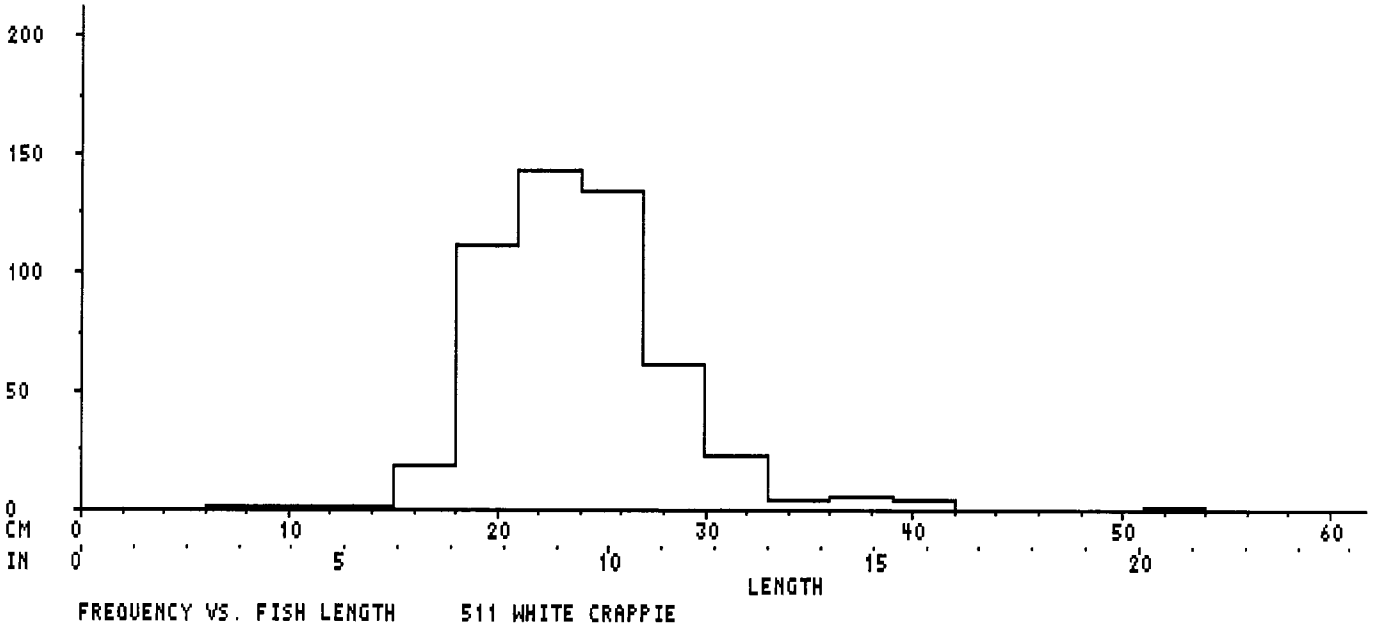

Figure 20. Newton Lake day creel 4/9/2000 through 3/15/2001. Length-frequency histogram of white crappie released by all anglers. Note the difference in scale from Figure 19.